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FRONTISPICE

to
VOL. 3.



Vol. 3.. 1893-4

The BRITISH PICTOGRAPHER

Raithby, Lawrence & C. Ltd.
Imperial Buildings,
Ludgate Circus,
London, E.C.

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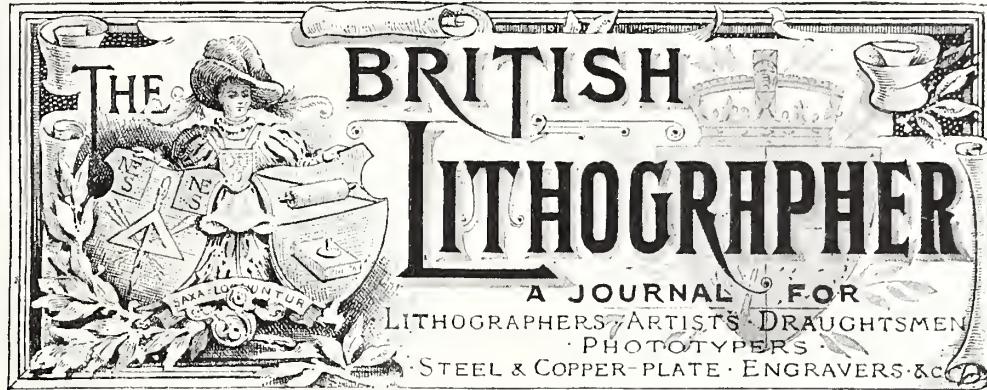
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CONDUCTED BY ROBERT HILTON.]

VOL. III.—NO. 13.

OCTOBER—NOVEMBER, 1893.

[CHARLES HARRAP, ASSISTANT EDITOR.

PRICE EIGHTPENCE.

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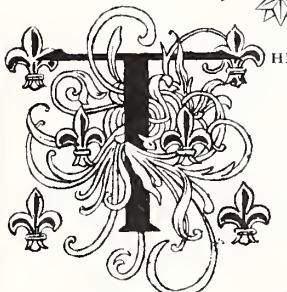
ISSUED EVERY OTHER MONTH, ABOUT THE END OF SEPTEMBER, NOVEMBER, JANUARY, MARCH, MAY, AND JULY. SIX NUMBERS FOR 4/- YEARLY.

Foreign Subscription, post free, 5/- Yearly.

Printed and Published by RAITHBY, LAWRENCE & CO., LIMITED, De Montfort Press, Queen-street, Leicester, to whom Business Communications should be addressed.

London: 1 Imperial Buildings, Ludgate Circus, E.C.

"AGAIN, THANKS!"



HIS being the initial number of our Third volume, offers a fitting opportunity to acknowledge the warm support given us in our efforts to provide a journal worthy of the craft. Both subscribers and advertisers have steadily increased, and we are, at the end of the second year, nearing the *bona fide* circulation we had estimated on not securing till the end of the third year.

Taking a cursory glance through the six numbers comprising the volume just completed, we are of opinion that our promises made in the first number have been more than fulfilled. We do not attempt the impossible by trying to satisfy everyone, but have the gratifying knowledge that we are pleasing the great majority of the workers in the lithographic art in Great Britain and a steadily increasing number in the "Greater Britain" beyond the seas.

Employers write us that they point to the work of our printing department, as shewn in the B.L. supplements, as a standard to be emulated, and artists not only frequently write to tell us how useful and helpful our illustrations are to them, but also suggest ideas and subjects for future use.

All this shows that our work for the craft is appreciated and valued by all branches, and affords us the encouragement and stimulus without which the best results cannot be obtained in any art or craft.

We are often amused with the variety of suggestions made by people who think that they know how to run a trade journal better than they appear to run their own business. Some of these people are over solicitous about the welfare of their favourite journal, and think that they can point out where changes should be made either in its appearance or policy. If publishers and editors were to try and meet the wishes of these individuals they would have a profitless and thankless task. Journals (and especially trade journals) should be conducted by those who know their business and who have the courage of their convictions. Those who try to please everybody gain the respect of nobody and lose money for their pains.

Our last number met with an enthusiastic reception, and resulted in a considerable addition to the sales, the appreciation of the "Donkey Boy" and "Lord Tennyson" supplements being shown by the numerous applications for copies of both pictures for framing.

In carrying out our programme to show specimens of all classes of work, we have, during the last year, presented our readers with no less than nineteen coloured supplements, being reproductions in from six to twelve printings; the majority in the latter number of workings. Two colour charts have also been presented, one collotype, one photophane print, a specimen of process-board work, four engravings, five etchings, one drypoint, four specimens of brush work, nine examples of pen and ink (photo-lithographs and photo-zincos), and six chalk subjects. Other examples of different methods have been produced, besides a series of plain sheets showing the composite colours of a coloured picture.

Thus, a grand total of sixty-four full-page supplements have been given, making an average of about eleven per number.

It must not be supposed that we can always give such an array of costly supplements, but if our subscription list and advertising patronage continue to grow as they have done, our hands will be strengthened. The more patronage of both kinds we receive, the more value we can put into the B.L.

Our Supplements.

"ST. MARY'S CHURCH AND CASTLE GATEWAY." This chromo will be of interest to our readers as being drawn on the well-known ready-prepared "line" cards introduced by Messrs. Gilby & Herrmann, who have prepared a series of these drawing boards in eight gradations of "tint" or "line," from the plain white card (which has a splendid surface for pen or brush work) to the "line" card of about three-quarter tint in strength. In a previous issue we have described how ordinary one-colour jobs can be produced on these cards, but it is a distinct novelty to produce an entire picture by their aid, and we are pleased to be able to place before our readers something that is new and good.

It would not be out of place here to describe the method again: the artist begins by putting in the dark touches of his proposed sketch, drawing either with black crayon, liquid Indian ink, or lamp black,

but he must not use a flat wash. He then scrapes out the high lights clean, taking the printed black line of the ground right out; a half scrape producing a quarter tint. The process is by no means difficult, and is easily mastered by the artist.

We will now explain how the chromo has been produced. A key has been made on thin gelatine in the ordinary manner from the original sketch, and has been transferred to stone. Then, instead of making the eight off-sets required for the colours in the usual manner, a very light blue tint has been made, and eight impressions pulled on the different "line" cards used in the production of the picture. The artist then proceeds to draw each colour on these different "line" cards in the usual manner.

After all the colours have been drawn to the satisfaction of the artist, they are placed in the hands of the photo-lithographer, who makes a photo-litho transfer of each colour, each one being exactly the same size, the outline, being in pale blue, disappearing entirely (as every artist is aware, blue is non-actinic in photography). The transfers are then placed on stone, great care being required at this stage that each photo-transfer receives the same amount of care, and is transferred under precisely the same conditions, or some would stretch and throw the whole thing out of register. The stones are then carefully looked over by the artist for defects, and any work that is required to be put in or removed is done, afterwards etched carefully, proved, and printed in the ordinary manner.

The whole thing can be quickly mastered, and the idea will, we feel sure, prove very useful to the lithographer who wishes to get pictures out quickly and cheaply. As regards quickness, it may be mentioned that an artist who has had a little experience with the paper could produce the accompanying chromo in one week (ordinary working days) easily. This will give our readers a little surprise and we trust they will give the idea a trial and let us know the results. The numbers and prices of the cards used in the production of the picture under notice will be found at the foot of the chromo.

Messrs. Gilby & Herrmann can supply lithographers with every requisite for their trade, from printing machines to printing inks. It may be of interest to our readers to note that this view of St. Mary's has been printed off stones supplied by them, with litho ink of their own manufacture.

We are constantly in receipt of letters asking us for information about certain inks and other materials used in our supplements. Individual replies to these would absorb more time than we can spare, so we propose in future to give information of this class along with the notices of the supplements themselves. We do this notwithstanding the fact that several subscribers have dropped the B.L., as they say, "because of the advertising character of the reading matter," as though it were possible to give useful information to business men without at the same time mentioning names and addresses, without which the information would, more often than not, be practically useless. In following this course, we do but carry out the invariable practice of trade journals generally.

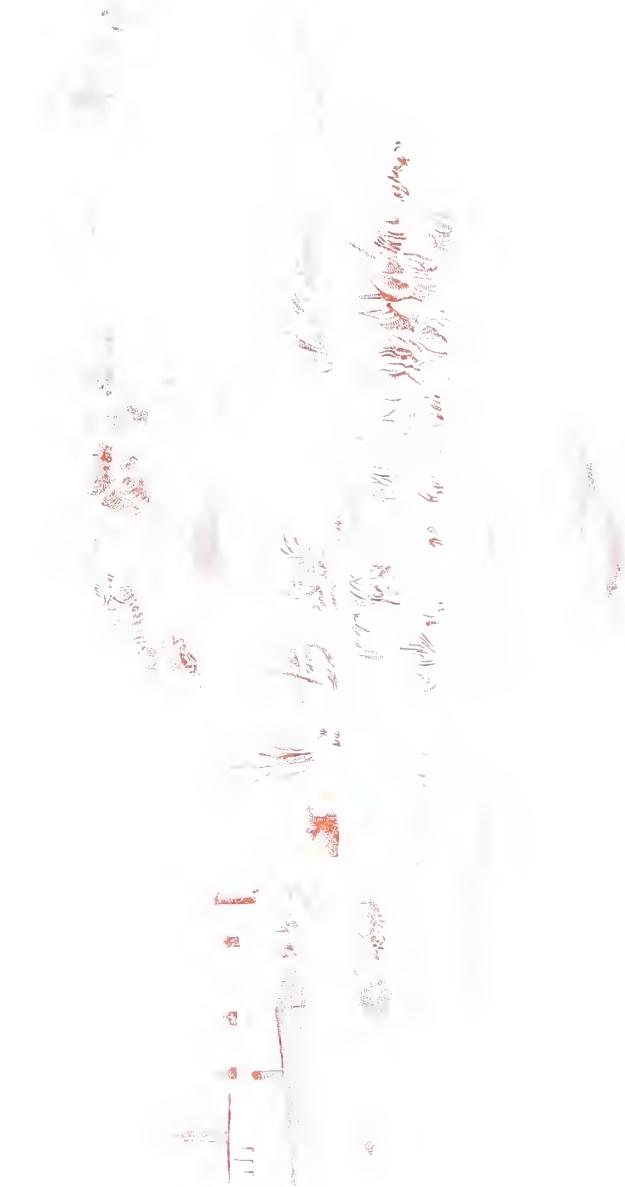
Printed with Mander Brothers Lithographic Inks.
On Smith & Mc Laurin's Celebrated Chromo Paper.

Works - Wolverhampton.
Johnstone, Scotland.

Colour No: 5. Light Blue.
Specimen of Chromo Lithography in 11 printings, drawn direct and printed at
machine from plates manufactured by the Patent Lithographic Zinc Plate Co. Ltd Hull.

Printed with Mander Brothers' Lithographic Inks.
On Smith & Co's Laurin's Celebrated Chromo Paper.

Works - Wolverhampton.
Johnstone, Scotland.



Colour No 4. Red.

Specimen of Chromo Lithography in 11 printings, drawn direct and printed at
machine from plates manufactured by the Patent Lithographic Zinc Plate Co Ltd Hull.

The inks used in Messrs. Gilby & Herrmann's supplement are : Lemon chromo, R 165A (2/-); mid. chrome, R 165B (2/-); permanent scarlet, R 100B (4/-); permanent ruby lake, R 43 (10/6); Chinese blue, R 109 (4/6); Prussian blue, R 115 (4/-); Oriental blue, R 135 (3/6); mid. brown, R 216 (2/-); light brown, R 212 (2/-).

All their inks are "made in London," and comprise some very powerful colours of splendid body, and exceptionally well ground, great pains being taken in this latter process, and in printing they work very freely and easily.

As every artist and printer is aware, the quality of the inks in the litho printing room forms a very important item, and it is by practical use that we can testify to these inks as being in every way satisfactory.

Eight printings have been used in this supplement, printed in the following order, viz., yellow, dark red, dark brown, light blue, light red, dark blue, light brown, and grey.

It has been printed from retransferred stones on Messrs. Smith & McLaurin's celebrated No. 211C chromo paper.

OUR "SUGGESTIONS"

show two pages of useful bits of ornament, head and tail pieces, initial letters, etc., printed on Grosvenor, Chater & Co.'s "Acme" printing paper, from retransferred stones, both pages being photo-lithographic reproductions from pen-and-ink drawings.

THE COLOUR CHART (No. 3)

which appears in this number will be found fully described in the article on colour now running through our columns. This chart is arranged to show how the same colours appear in contrast, or in combination with, different ground tints. A careful study of this chart should be very useful to artists and printers alike in educating the eye in colour harmony. Five workings were used in this subject, printed in the following order : red, yellow, blue, grey, and black. It is printed on Smith & McLaurin's 211C chromo paper, with A. B. Fleming & Co.'s, Ltd., inks, list and prices of which appear at the foot of the supplement.

THE FIGURE STUDY

which we present in this number is a very fine example of collotype from a charcoal drawing. This nude study was drawn from life by Mr. E. T. D. Stevens, whilst a student in the National Art Training Schools at South Kensington. It is a study in line work solely, and the original was produced in charcoal, which is, as every artist knows, a most difficult medium to work with.

From time to time, as we have promised, we shall give further examples of fine figure studies, as also occasionally reproductions from photos from life.

This supplement has been collotyped, and that in an exceptionally first-class manner, by the well-known firm of Messrs. R. Gardner & Co., of Glasgow, of whom we have something to say on another page.

OUR "EVERYDAY" SPECIMEN

for this number is a reprint of portions of cheap work. The cigar box label and the book cover are jobs in which Day's mediums have played a very important part. That of the Workmen's Exhibition diploma is such a small piece of the whole design that little can

be gleaned of the general effect, but there is sufficient to show the scheme of colouring. This design, by Mr. G. W. Harvey, of Stockwell, won the first prize in the open competition, Mr. W. J. Nunn, of Clapham, being second.

"HULL ZINC PLATE CO.'S" SUPPLEMENTS.

Two more of the colours of the view of St. Mary's Church (given complete in a previous number), printed from zinc plates, are also shewn, being the dark red and the light blue. These were printed from the Hull Zinc Plate Company's plates, at machine, from retransfers. Special attention is called to the light blue, where some very fine chalk work is shewn. This, on such a long run, is a further evidence of the value of zinc plates for good work. They were both printed with Messrs. Mander Brothers' inks on Smith and McLaurin's chromo paper.

A COLLOTYPE FROM THE ANTIPODES.

A splendid specimen of the "Crisp Photo" process finds a place in this number. This is stated by the printers, Messrs. F. W. Niven & Co., Ballarat, Victoria, Australia, to have been printed at the quick rate of 500 per hour, a fact which, looking at the excellent quality of the printing, shows that they are making rapid and notable advances in their methods on the other side of the world. We shall probably have some of our readers down on us for printing this rate of speed for collotype printing, but it is vouched for by independent testimony of a reliable character. Elsewhere in this issue will be found a notice of this enterprising firm, with portraits of the principals. It is extremely interesting and gratifying to us in the old country to have the opportunity of seeing such good work as this, and we heartily congratulate our Antipodean *confrères* on the high standard they are setting.

THE "LITHOGRAPHERS' EMBLEM"

is presented as an extra special supplement. Great care has been taken in the lithographing of this subject, and none but the very finest work is on the job. It has been drawn in gold and twelve colours, and printed in the following order : gold, yellow, flesh, dark red, light blue, light pink, second pink, light grey, dark blue, light brown, second grey, dark brown, and dark grey.

This design has been printed with Messrs. Mander Brothers' inks, which show their acknowledged purity and strength to very great advantage. The brilliancy and free working of these colours could not easily be excelled. The job has been worked from retransferred stones and afterwards roughed in a novel manner.

This supplement, as a work of art, will no doubt be carefully preserved by all lovers of the craft.

We also give, as promised, the first two plates of the

"ARMS SUPPLEMENT."

In this we are supplying a frequently enquired for want. We have had these under consideration for some months past, and only the considerable preliminary expense has delayed their appearance. We are aware that in the opinion of some people the science of heraldry and arms is dry and uninteresting, but we think this has arisen from the want of a well-arranged grammar, which would entice artists and

THE BRITISH LITHOGRAPHER.

others interested to further research. We do not suppose for one moment that this work, which will occupy some years to carry through, will be complete or faultless in any way, but no time or labour has been spared in collecting the materials from which these supplements will be formed.

“ . . . No mean device
Is sculptured on his shield: a man in arms
His ladder fix'd against the enemies' walls,
Mounts, resolute, to send their rampires down;
And cries aloud (the letters plainly mark'd),
‘Not Mars himself shall beat me from the tow'rs.’”

—ETECLUS.

A few explanatory remarks may be of service to our readers unacquainted with the subject. “Accidents in Arms” are those marks or portions of the design which have no participation of them. They can be removed and yet the heraldic significance remains. They are divided into “textures,” “partition lines,” and “differences.” Textures are the various colours, and they consist of “colours” and “furs.” There are nine colours, which will be found in plate I. “Furs” (known by the name of “doublings” when used in the lining of mantles) are rarely found in the arms of boroughs, but occur often in the crests of individuals. They are seven in number, as shewn in plate I. By referring to plate I it will be seen that the “colours” and “furs” are expressed by lines or dots; and as we are shewing the arms in one colour, these lines must be committed to memory, then at a glance everybody can tell the colouring of any particular crest or blazon he requires. By each crest on plate I. is given the name of the colour or fur, with further names which may be occasionally met with, as also their representation, thus:—“Gold” in blazon is known chiefly as “Or,” and is supposed to represent “Constancy,” and so forth. An “Escutcheon” is the form or representation of a shield, of whatsoever kind. A “charge” is anything that occupies the field or groundwork of the shield, whether it be natural or artificial, celestial or terrestrial. In plate II. we give some of the more important “charges” on an enlarged scale. By reference to these the artist can see the correct heraldic way to draw these charges.

This supplement has been drawn direct on stone by the brush (including the lettering) and is printed on Messrs. Smith & McLaurin's two-sided “enamel” paper with Messrs. Mander Brothers' inks.

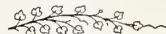
MESSRS. MANDER BROTHERS' SUPPLEMENT.

THE special supplement lithographed and printed by Messrs. E. S. & A. Robinson, Ltd., of Bristol, for Messrs. Mander Brothers, is a pleasing design. Gold and twelve colours have been used in producing this very neat advertisement. The design speaks for itself, and the whole thing is creditable both to the artists and printers. Messrs. Mander Brothers' colours here again show to distinct advantage, opportunity being given them for most effective display.

MESSRS. CAMPBELL, MARSDEN & CO.'S

specimen of engraving, which will be found in this number, is undoubtedly a fine example of the art. Both the artistic design displayed in the top left-hand corner and the body of the circular are most beautifully engraved. We have lately had the pleasure of seeing

some of their steel-plate work, an example of which we hope to print in our next issue. The high standard of their work entitles them to rank amongst the leading engravers of the day.



A PERFECT SPECIMEN OF LITHOGRAPHY. — *The Paper Record* in its World's Fair correspondence has the following:—“Perhaps we may claim as an English lithographic firm Messrs. Raphael Tuck and Sons, whose American house is responsible for an exhibit in the British section of the Liberal Arts Building. This occupies a space 35 x 15 feet. It is a facsimile of the New York office, the outer stall and the cases within it being in polished oak. Specimens of all their artistic lithography work, large and small, are exhibited here. The gem of the collection is a reproduction of Raphael's “Madonna” done in twenty-six printings, all the progressive proofs being shown. This is acknowledged by the American press to be the most perfect specimen of lithography ever seen, and is said to have taken Messrs. Tuck's best lithographer eighteen months to complete.”

PHOTOGRAPHY AS A GUIDE TO ARTISTS. — Photography can not only show up impostors and discover new stars, unravel forgeries, and draw wonderful plans from the height of a balloon, read the vibrations of the wings of an insect, and control the movements of an engine, but it also extends its aid to æsthetics. Movement is the rapid succession of an infinity of different attitudes, and, therefore, the representation of movement can only be the result of these attitudes. The artist must select the proper attitude. A photographer may be an artist. If not in the interpretation, at least in the selection of his subjects, and by his power of selection alone he can impress his own personality on the work done by the sun on the sensitive plate.—*Revue des Deux Mondes*.

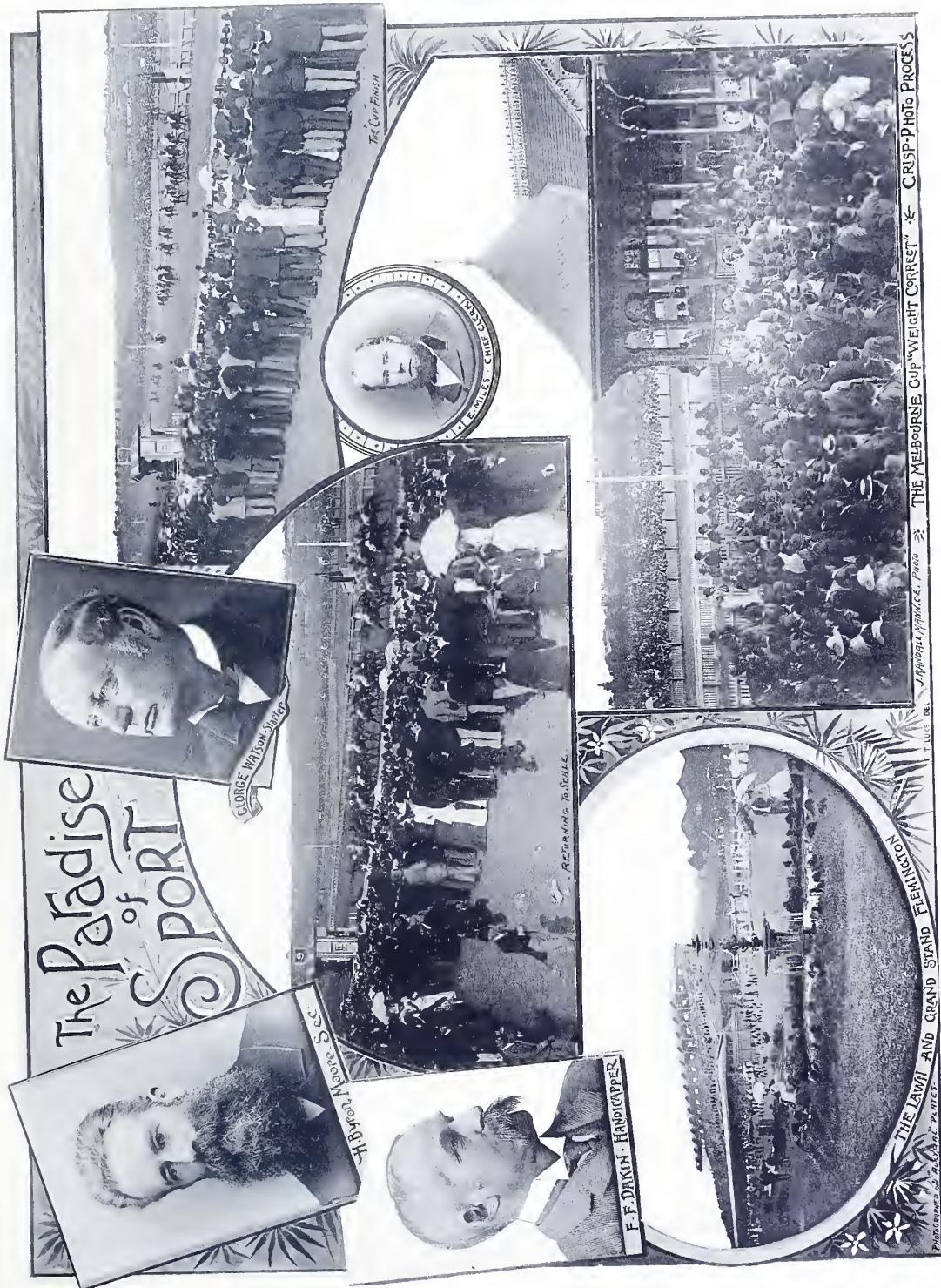
No. 6, vol. I., of *The Studio* is a compendium of all-round useful and interesting papers. “Artistic Houses” is well illustrated, and brimful of ideas to the decorative artist. The chat with the well-known designer and architect, Mr. Voysey, is of much interest. Many beyond Birmingham men will find the illustrated article dealing with the paintings in the Town Hall attractive, while the awards in the wallpaper prize competition have produced a series of productions of high order.

THERE is a common notion that genius elevates its possessor above the observance of rules, a notion that falls in with the many vague impressions against the value of teaching in matters of taste, impressions flattering to indolence and to the vanity that so often gives to the possessor of a certain degree of imagination high opinions of his own genius.—LESLIE.

A LEIPZIG printer has been experimenting with aluminium plates in substitution for zinc plates, with a result that, although the cost is a trifle more, the surface is harder and more durable, and the fine lines sharper. The exceptional lightness of this metal also constitutes a further advantage.

THE LITHOGRAPHER'S EMBLEM





THE RACE FOR THE MELBOURNE CUP.

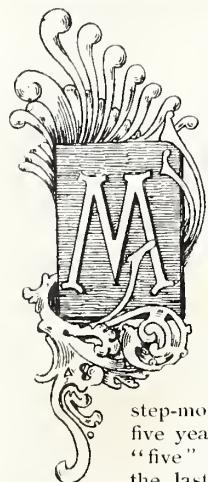
SPECIMEN OF "CRISP PHOTO" PROCESS, BY F. W. NIVEN & CO., BALLARAT, VICTORIA, AUSTRALIA.

Reproduced from common photos, and printed at the rate of 500 per hour on ordinary paper.



OUR PORTRAIT GALLERY.

F. W. Niven & Co., Ballarat (Victoria), Australia.



R. F. W. NIVEN, the senior partner of the above flourishing firm, comes of a good family of Scotch extraction, having a decided artistic tendency, especially on the father's side. He was born in Dublin in 1831, attended the best of the good schools in that city, and when thirteen years old ran away from home and a step-mother to go to sea, where he served five years on board ship, and visited the "five" quarters of the globe. During the last years of his apprenticeship he was acting as chief mate, having passed all his

pleasure to F. W. N. On a lengthy voyage to Calcutta and the Isle of France, being shipmate with several old whalers, he drew for them a set of rather highly coloured pictures of blood-curdling whaling adventures and misadventures, which had, of course, to be manufactured mostly from word of mouth description only, but which, nevertheless, more than satisfied his nautical clients, and ensured the goodwill of all on board.

About this time, 1851, the news of the discovery of gold in California, and afterwards in Australia, fired the imagination of our sailor friend, and he forthwith took passage for Melbourne. Arriving there early in 1852, he made straight for "the diggings" at Ballarat, where he worked in all kinds of deep mining with varying success, never being quite amongst the lucky



F. W. NIVEN.



HENRY N. NIVEN.

examinations and obtained his certificates. It may be mentioned here, as a characteristic of the man, that during all his spare time on board ship his artistic proclivities were kept fully exercised, and many an otherwise monotonous hour of "watch below" was pleasantly filled by the making and rigging of ship models, etc., one of which (executed during ship's time) realised £50 to the captain, and nothing but

ones. After seven years of this kind of work, and being now a married man with a young family, he began to look about for a more reliable occupation.

Someone fresh from England had a small lithographic plant for sale, which had been used for many years in the Staffordshire Potteries, consisting of a hand-press, a few litho stones, and a copperplate press, together with a few cans of ink, etc., the whole

of which were purchased by Mr. Niven for £40. He then set to work with no more practical information on the subject than could be gained from a very brief description in "Ure's Dictionary of Arts," giving the bare principles of the art of lithography. The person who brought out the plant being dead, no one was available who could practically coach him. After a few months of experiment, often carried far into the night, a business card (of a kind) was produced, and other work executed which brought in about £50: one particular job being 5,000 billheads, all of which were printed one by one from a design drawn by himself on the stone, and by the time the last was finished the job stood up so high in relief, from constant etching, that it could almost have been worked as an ordinary letterpress block. Then professional opposition came along in the shape of a German stone engraver, who declared that he had been receiving £9 per week from the Government; and our novice was so much impressed with his own deficiencies, and his opponent's imagined superiority, that he actually accepted an offer of apprenticeship from the "enemy," and gave all his little plant as a premium, only to find out later on that his employer did not know nearly as much of the profession in a general way as he did himself. However, steady progress for the benefit of his employer continued to be made, and the excitement at this period (1857-8) was so keen that any apology for a picture or view of "the field" was eagerly sought for and purchased for dispatch to far-away friends. The discovery of the "welcome" nugget, 2,217 ounces, at the "claim" on Bakery Hill, may be cited as an example of this. A litho reproduction of the nugget and a view of the place where it was found was drawn and worked by Mr. Niven; thousands of copies were sold at 1/- per copy, £450 being realised to the proprietor on this venture alone. In a few years the German gentleman completed his fortune by a lucky stroke in a mining venture, curiously enough from information he received from Mr. Niven, who had not the means to profit by the information himself; but it led subsequently to his purchase of the business on terms at about double its value in 1863.

From this a new era set in for the establishment. Various additions were made to the plant, including a letterpress outfit, and in 1873 the first modern steam litho machine in the colony was adopted and set to work. It may be mentioned that even so late as this period considerable difficulty was experienced in overcoming the prejudices of some of the workpeople, who imagined that their vocation was in danger. Even some of the early Melbourne firms of printers were doubtful of the suitability of fast machines for working in the hot climate, as they thought that the stone could not be kept properly damp, and were greatly surprised to find that when Mr. Niven was written to on the subject, he gave this as the very reason why he had expected success and had decided to try them, as the extra speed of the machine would prevent the possibility of drying when properly regulated. It need hardly be added that the result proved his judgment to be correct.

Nature printing, or photographic reproduction, next engaged the attention of Mr. Niven. Having long

practised as an amateur photographer, he went to work on the collotype basis with his usual zeal, and after untiring efforts, and in conjunction for some time with a trusted employé, Mr. Harry Crisp, he has evolved a distinct method exceeding in results all his most sanguine anticipations, and which is protected under the name of the "Crisp Photo Process." Upon this work two machines are kept constantly running. In fact, at the time of writing there is work ahead which will occupy them fully six months.

One of the main features of the process is the hardening of the plate without impairing the artistic results, and thus long runs may be successfully taken from it and an excellent speed maintained. Some of the examples of chromo work which have been produced by it are really marvels of beauty, and rival the finest hand-coloured photographs; in fact, it is difficult to believe at first sight that the pictures have been produced by mechanical means at all. Perhaps no better tribute can be mentioned as to the esteem with which this class of work has been received by the public than to instance the fact of the rapid sale of the charming productions in book form, "Marvellous Melbourne" and "Golden Ballarat," second editions of which have had to be produced to meet the demand. A word of praise is due to the taste of Mr. E. T. Luke, the artist who is responsible for much of the arrangement and embellishment of the composite pages of the above works.

An extensive laboratory has been fixed up with dark, developing, and oven rooms sufficient to cope with a greatly extended business in this line, Mr. Crisp being the presiding genius in this department.

Much of the success mechanically Mr. Niven attributes to the use of the excellent machine specially imported from Messrs. Schmiers, Werner, and Stein, of Leipzig. In addition to the above there is in the machine department on the litho side a Hughes and Kimber litho machine, which Mr. Niven has altered and adapted for collotype work; various fine litho machines by Wm. Greaves and the Messrs. Ratcliffe, of Leeds; hand presses, a stone grinding machine, and other requisites. On the letterpress side are various "Wharfedales" by Messrs. Payne and Sons, and Messrs. Dawson, of Otley, ranging from folio to quad demy, power for the whole floor being obtained from one of Crossley's Otto engines.

Succeeding floors are devoted to the artists' department, and warehouse and storage purposes, the top one being occupied by the composing and binding departments. In addition to a well-assorted collection of modern *serviceable* faces in type, and well-arranged frames, together with the various little *etceteras* such as our compositors delight in nowadays—a rule curver for instance—there is a proof press, Columbian hand press, and Arab and Golding jobbers. In the bindery there are two machines of Mr. Niven's devising, one being a varnishing machine, and the other for drying gummed or varnished work.

In conclusion we may say that Mr. Niven recognises the wisdom of collecting round him a staff of well proved employés, and in this he is well supported by his eldest son and partner, Mr. H. N. Niven, whose portrait, together with that of his father, we have

pleasure in presenting herewith. Mr. Niven, while attending to his extensive business in a thorough manner, does not neglect his duties as a citizen of golden Ballarat, and holds the responsible position of President of the Chamber of Manufactures. He is also a member of the Art Gallery Committee, and President of the Ballarat Amateur Photographic Society, and affords yet another instance of what may be accomplished in the face of adverse circumstances by the exercise of tact and indomitable pluck and perseverance.

By the kindness of Messrs. Niven we are privileged to show, in addition to the portraits mentioned above, a characteristic example of the Crisp Photo Process selected from "Marvellous Melbourne," showing scenes on "Cup" day, the greatest sporting event in the Sunny South.

The Proposed U.S.A. Lithographic Technical School.

URTHER information to hand regarding the proposal for establishing a technical school for lithography in the United States shows that opinions are not exactly unanimous in its favour. The announcement of the practical and moral support openly given to the project by the National Lithographers' Association has naturally aroused the various sections of the art to a careful examination of the conditions under which they are working, and the probable results to be obtained from such a departure. Thus the correspondence resulting and various other expressions of opinion are of much interest, as explaining the action and feeling of the various members throughout the profession.

The School of Lithography has at its basis the betterment of the conditions of the lithographic art, both as regards the improved position and increased capacity of employés and the due consideration of the interests of employers. An enquiry into the conditions of capital and labour in this respect shows that "the attitude of skilled labour toward educational enterprises in the United States is one of obstruction because of fear, and of protest because of past unfairness. In the first, the multiplication of working men seems a menace to individual prosperity and high rate of remuneration; in the second, the action of some employers, based upon disastrous competition, has excited distrust as to the rectitude of their intentions. Thus, whenever a proposal is made in which the employer takes chief part, the employé is instant in regarding it with distrust, and quick to make his opposition felt. This is to be deeply regretted, because manifestly unjust. All employers are not of the same temperament, nor are the methods they pursue uniform. The generality of conditions, moreover, in the industrial arts, where an artisan is necessarily of higher intelligence than in merely mechanical trades, is such that if the workman possesses extraordinary skill he can command unusual remuneration, no matter what the intentions or the honour of his employer."

Further comments on the position of lithography in the States are well worth noting. As in our own country, the situation is one of peculiar gravity. "Apprentices abound in the establishments throughout the country who have neither opportunity to learn, nor a tutor to impart, the fundamental principles of their art. They are being utilised in connections which deny them a possibility of acquiring further than the merest of manipulative details. As lithographic artists they are failures; as expert printers and transmitters, they have no place save as a 'tool in the hands of a master.' Experience has shown that they do not pass beyond the stage of their early knowledge, but remain in positions where progression is denied them, until either disgust drives them out into the field, or a fortunate chance is afforded them to pass into a higher realm through the tutelage of some better natured and expert workman." Such instruction is slow to come, it is asserted, "because the workman is himself compelled to utilise every moment of his time and talent. This may be the reason for denying the apprentice that for which he enters the craft; but the cause may be attributed to another motive altogether, and we find it in the very natural and human distrust that, when the apprentice shall have been thoroughly instructed, the employer may utilise him as a force to bear upon the workman himself, either in the reduction of his salary, or the possible superiority which the youthful vigour may impart to the work that is to be accomplished. Many intelligent artists and skilled workmen have acknowledged this fact, and have asserted themselves, in secret, as in favour of an educational enterprise where such influences, which it is never possible to avoid in the lithographic establishment, shall be entirely nullified. Each participant in the industrial return is willing to benefit the embryonic working man, but very naturally and distinctively desires to be exempted from individual suffering, deeming himself the 'fittest' to survive. Such is the general situation, adding thereto the extreme effects of competition, which has reduced the individual prosperity to its minimum, while benefiting the greater number of those who find it necessary to maintain existence by personal labour."

Thus, as will be seen, the whole question of the future of lithography in the States has been opened out, and there is naturally much probing of consciences and national and personal examination. The result cannot fail to be healthy to the trade.

RAPHAEL'S MASTERPIECE, "The Madonna di San Sisto," is considered, and quite worthily, the triumph of the Dresden Gallery. It is, perhaps, a picture which commends itself to all from its perfection of execution and beauty of subject. It has been reproduced from time to time by many methods, but never more acceptably than by the Berlin Photographic Company, who are sending out copies of it.

THERE is only one way of learning art, as any other profession or accomplishment, and that is, to begin at the very beginning, think nothing too unimportant, and, above all, never grow impatient, no matter how slowly you seem to be getting on.—HUME NISBET.

How to make Pen-and-Ink Drawings for Process Work.



IN another article I have explained as far as can be done on paper, the process by which phototype illustrations are produced for the press, and the manner in which copies may be taken from photographs for this purpose. I will now endeavour to make clear in as precise a manner as possible the way in which the illustrations, technically known as "line" drawings, are produced.

In the first place, it has often been said, even by men occupying high positions in the artistic world, that artists are born and not made. To a certain extent this is correct, as no doubt in this profession, as in all others, the genius of the first water, the man who stands head and shoulders above all his contemporaries, possesses an inborn talent for his work; but it is possible for any one gifted with an ordinary amount of intelligence and capability for hard work to make a more or less skilful draughtsman. The path to success, however, is by no means an easy one, continual study and labour being essential at every stage. In fact, it is impossible to become absolutely perfect. For the artist of feeling the whole world, animate and inanimate, affords interesting matter for thought and study; and, as one of the chief means of obtaining a hearing in a profession already overcrowded with men struggling to get a foothold is to strike out an original line, it is necessary that the student should possess a keen eye for fresh subjects, and a vivid and retentive memory. Granted these conditions, the ambitious pupil may commence his studies.

As the ordinary printer is probably ignorant of even the first principles of an artist's method of work, it may not be uninteresting to state briefly some of the leading rules by which it is necessary that he should be guided. It is useless to commence drawing anything unless you have a clear and definite perception and grasp of your subject, and thoroughly understand its proportions and have defined its limits. As in photography, so in a greater degree in draughtsmanship, a clear knowledge of the value of lights and shades, and a thorough acquaintance with "perspective" is of first importance, and it is here that a great deal of hard work can be put in. Perhaps the best books for a new beginner are Vere Foster's, where the information is prepared and arranged in a most careful and commendable style.

For landscape work, after the preliminary courses have been gone carefully through, the student should endeavour to advance by very easy stages—that is to say, to choose at first a subject which he can

clearly grasp, where only one line of perspective is required, and where the background is not confused by a variety of objects.

For instance, we will imagine that the scene chosen is a country lane, with a wall on one side and an open field on the other, with a farmhouse in the far distance, and a few trees within the line of sight behind the wall. It will be easier to attempt this in winter time, when the branches of the trees are quite bare, as the leaves very often prove extremely difficult to render naturally. The student should be careful to avoid standing in a too central position, and should endeavour to reproduce the shadows only, taking no notice whatever of the lights, as a much finer artistic effect is obtained by adopting that course. It is a mistake to suppose that the outline itself of the subject should be drawn; it is the shadows that should be filled in, and the real outline, as far as possible, merely reflected or suggested by broken lines. By broken, I mean that the pen should be held very loosely, and should be guided so as to produce a wavy rather than an absolutely straight line, and it should be lifted altogether from the paper at intervals of from a quarter of an inch upwards, according to the size of the sketch. Straight and unbroken lines make a very crude and unnatural impression when the drawing is finished, and, in fact, a true picture could not be drawn if continuous lines were used. Tints are got by varying the thickness of the lines. Thin and open lines must be drawn to depict the lighter shades, and as the shade deepens in intensity the lines should gradually increase in thickness, and at the same time be placed closer together. Care should be taken to keep the lines from running into each other, and to make no attempt at crossing until the strokes are dry. If this is not carefully watched, the risk is incurred of losing part of the effect by the confusion and running of the lines, whereas in crossing it is necessary that each stroke should be quite separate and distinct.

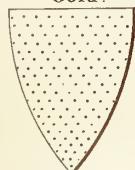
In order to train the eye to appreciate beauty and flow of line, the beginner would do well to study the lines used by some of the best artists whose drawings are reproduced on wood, especially as regards the angle at which lines running transversely should be drawn, as nothing is so detrimental to a pen-and-ink sketch as to see the lines crossing at wide angles. In the case of rural scenes, and, in fact, in any kind of work, with the exception of architectural subjects, it is desirable to avoid using photographs, except as an after-guide for the sake of comparison; but with buildings it would save time and trouble if the student procured a photograph of the subject chosen. He would in this case be enabled to obtain a more strictly correct drawing than if he merely sketched it upon the spot, for in such work the lines are necessarily longer, straighter, and firmer than in figures or landscapes. After carefully copying with pencil every detail as an architect would do, he should proceed with pen and ink to suggest the shadows, as stated previously, rubbing out all lines in the high lights. This gives a very sketchy appearance to the drawing, which the novice is apt to believe is easily produced, but it is in reality only obtained by taking the greatest

The Arms of the Boroughs & Towns of Great Britain.

Containing various points of note for the artist on the ART of BLAZON.

COLOURS.

¹ Gold.



"Sol" "Topaz" "Or."
Constancy.

² Silver.



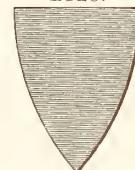
"Luna" "Pearl" "Argent".
Sincerity of Life.

³ Red.



"Mars" "Ruby" "Gules"
Fortitude.

⁴ Blue.



"Jupiter" "Sapphire" "Azure."
Loyalty.

⁵ Black.



"Saturn" "Diamond" "Sable"
Prudénce.

⁶ Green.



"Venus" "Emerald" "Vert".
Continued Felicity.

⁷ Purple.



"Mercury" "Amethyst" "Purpure".
Temperance.

⁸ Orange or Tawny.



"Dragon's Head" "Jacynth"
"Tenne or Brusk"

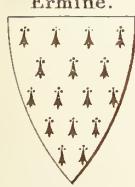
BLOOD COLOUR.

Proper or Natural Colours are indicated by slight shading, without any regular marks or lines as the other colours.

"Dragon's Tail" "Sardonyx" "Murrey or Sanguine."

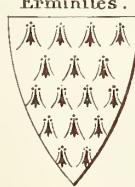
Metal is never placed
General Rule. — upon Metal, nor
Colour upon Colour.

¹ Ermite.



White sprinkled with
Black Spots.

² Erminites.



White sprinkled with
Black Spots.

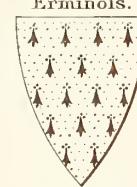
FURS.

³ Ermines.



Black with
White Spots.

⁴ Erminois.



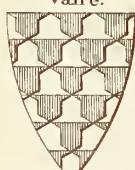
Gold or Yellow sprinkled with
Black Spots.

⁵ Pean.



Black sprinkled with
Gold or Yellow Spots.

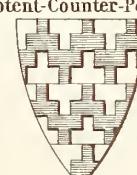
⁶ Vaire.



Varied Colours,
According to the Markings.

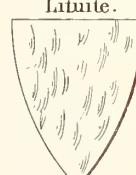
Called Vair when composed of Argent & Azure.
" Vaire when composed of any other colours
not exceeding two.
" Verrey when composed of three or four colours.
" Counter-Vair when the cups are placed
chief against chief.
" Vair-en-Point when the points of the cups
are placed in the centre of
the chiefs.

⁷ Potent-Counter-Potent.



Varied Colours.
According to the Markings.

⁸ Litice.

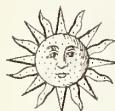


White.

The Arms of the Boroughs & Towns of Great Britain. Containing various points of note for the artist on the ART of BLAZON.

SOME OF THE MORE IMPORTANT CHARGES DRAWN ON AN ENLARGED SCALE.

The ¹ Sun.



The ² Moon.



The ³ Antelope.



The ⁴ Boar.



The ⁵ Stag.



The ⁶ Stag.



Absolute Authority.

⁷ Stag's Head.



⁸ Stag's Head.



The ⁹ Goat.



Boldness.



Hearing.



The ¹⁰ Horse.



The ¹¹ Lion Rampant.



The ¹² Lion Passant.

The ¹³ Lion Dormant.



The ¹⁴ Lion Cardant.



Policy.



War.



Nobility.



The ¹⁸ Spread Eagle.



The ¹⁹ Falcon.



The ²⁰ Dolphin.



The ²¹ Serpent.



Resolution.



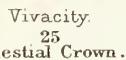
Fleur-de-Lys.



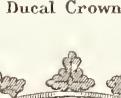
Magnanimity.



Vivacity.



Charity.



Subtlety.



Perpetuity.



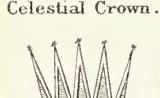
Purity.



Beauty & Love.



Celestial Crown.



Ducal Crown.



Imperial Crown.



Mitral Crown.



Horn.



31 Lymphad.



32 Maltese Cross.



33 Helmet.



34 Sovereign's Crown.

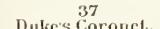


Prince of Wales' Coronet.

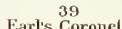
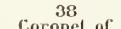
35 Coronet of Princes of the Blood Royal.



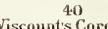
37 Duke's Coronet.



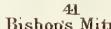
38 Coronet of a Marquess.



39 Earl's Coronet.

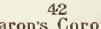


40 Viscounts Coronet.



41 Bishops Mitre.

42 Baron's Coronet.



care in the first drawing out. The pupil, by studying the works of Joseph Pennell, who is considered the best artist in pen and ink of the present day, will get a better idea of what I intend to convey in the foregoing.

Without the aid of explanatory illustrations it is exceedingly difficult to describe exactly the means which are used to obtain artistic effect and workman-like appearance in a sketch, but perhaps these few hints will help to a better understanding of artists' methods when their bearing is taken in conjunction with specimens of work such as I have described.

Of course, much difference of opinion exists as to the degree of merit of different artists, but in the main it will be seen that they all work from the same basis and use the same means to obtain what, by virtue of their various methods of execution, gives to the eye an altogether different effect when completed.

Now, with regard to figure drawing, it is worse than useless to attempt to copy photographs unless, perhaps, those taken by the stereoscopic process, which, when focussed in the special lens made for this purpose, appear as they would viewed from the figures themselves. In order to be able to sketch true to the life, in addition to his lessons in pen and ink, an artist should carefully study the principles of physiology and anatomy, and endeavour to make a true delineation of every bone and muscle in the human body. The proper course to follow to gain this knowledge is to join what are known as the "life" classes. Here the construction of the frame is first explained by means of casts of different portions of the limbs and body, and the student is gradually led to the higher studies from the nude. In this connection also it may be said that perfection is never reached. The frame is made up of so many delicate and intricate muscles and sinews that to trace, and faithfully copy, every one is the work of a lifetime.

After finishing the English classes, many of the promising men are sent to Paris, where, as every one knows, art is supposed to have reached its top-most pinnacle. Germany and Italy also afford vast fields of knowledge for the artist who desires to become a true cosmopolitan in his profession. Of course, in Italy the schools are mostly devoted to the teaching of painting, as in that country one is able to obtain probably the finest scenery in the world.
—A. J. GOUGH, in *British Journal of Photography*.

SENEFELDER MONUMENT.—We reported lately that a monument had been erected in Berlin to the inventor of lithography. The *Papier Zeitung* now says that the only living representative of the Senefelder family, a nephew of the inventor, who commenced his career under his uncle's auspices, has applied for support to the committee, as he is over seventy years old, poor, in bad health, and nearly blind. Unfortunately the committee have no funds left, and all they can do is to promise to reserve part of the money realised by the sale of the pamphlet written to celebrate the inauguration of the monument. There are about 3,300 copies left, and they can be obtained from the firm of W. Hagelberg, Bunhill-row, London, E.C.

The Discoverer of Zinc Etching.



But few of the readers of this journal know that photo-zinc etching and photo-lithography, in so very many ways the same thing, were invented by two different men at almost the same time, the one being in England, the other nearly on the opposite side of the globe, in Melbourne, Australia.

It was in the year 1859 that Mr. Osborn, of the Survey Department of Australia, sent a young man to England to confer with Sir Henry James about the new Australian method of reproducing and making printing plates for publication. Sir Henry James was surprised that the method was so very much like his own invention, which he made—nearly—by accident, and he showed the young man some very good prints, and told him the story of how he came to invent this great medium of modern reproduction.

According to a book on zinc etching, published in 1862, by A. D. C. Scott, Sir Henry James was visiting friends at Ryde, on the Isle of Wight, and made the acquaintance of a young lady artist who had great skill and talent in copper etching. She mentioned to Sir Henry James that it would be of great advantage to the public if there could be a way of producing art subjects in a cheaper manner than that of copper etching or steel engraving. The idea aroused in Sir Henry James the desire of finding some means of duplicating the etching made originally by the artist, so that the prints might be obtained in quantity. After trying several methods of fixing a picture on a metal plate he tried to make a print on chrome carbon paper, which process was used at that time (1859) in photography. He prepared the paper, printed a picture on it, then inked it in and developed it, and obtained a very nice copy which he transferred to a sheet of zinc. He further prepared and etched it, and his pleasure knew no bounds at the satisfactory results he attained in etching his plate deep enough to print many thousand copies from it. He began to improve his method day by day, and in a short time he found himself overworked on reproducing old manuscripts and masterpieces of ancient art. Handwriting of Edward I. and the great Doomsday book, written in 1086, at Winchester, were among the first great works of reproduction by his invention. Day after day new treasures of art of long-forgotten masters, authors, and celebrities, came to light and brought refinement and education to mankind.—*American Art Printer*.

IT is to genius that we owe the discovery of all the laws of nature yet known, and to genius do we look for future discoveries, or greater accuracy superadded to our present knowledge. Genius should, therefore, be the last to violate those principles it has been the first to make known, and I believe it will be found that so far from genius being lawless, its existence is proved by the knowledge of, and obedience to, the laws of art, such as is never displayed by mere talent or cleverness, although the latter may often seem to adhere most closely to established precedent.—LESLIE.

Line Effect.



It is a well-known fact, that the line effect takes a great part in the impression of colours, as every plate or stone in colours gives another direction to the lines for which it is used. The purpose of this article is not to give a repetition of other similar kinds of treatises, but it is a real, practical self experience, showing how to apply the above in plain and crossed lines for the use of pictures.

The following description refers solely to the production of plates of colour; yet it is especially applicable for illustrating purposes in zincography.

Prepare a carefully drawn grating upon a quarto stone with the ruling machine; better still if the lines are made upon asphalt ground (Etching of Asphalt). The blue stone in use for this experiment must be well polished and in every way perfect.

The distance of every single line must be equable and thorough, for every mistake, no matter how small it may be, makes some disarrangement in the impression of the whole. It is entirely left to the lithographer whether he prefers to draw the lines with a sharp diamond or whether he chooses to prepare them with an etching of asphalt. My opinion, however, is that etched lines look more accurate and smoother than the others. After drawing lines upon the asphalt ground, etch them for about two minutes, according to the character of the picture which is to be executed. For etching purposes take, generally, twenty-five parts river or rain water and one part chemically pure acetic acid; if the lines, however, are intended for colour plates, then three or four minutes are necessary for etching.

I suppose, after a trial of this recipe, that the process of etching in asphalt is known, as well as the material, manipulation, etc. After the rulings are etched and inked, it is wise to take a reprint of the original plate, for preservation and in order to prevent any damage whatever to both plates. The reprint is done to save the original plate from frequent ruling; faster proofs and impressions can also be had upon reprint paper. If a picture is now to be produced by this method, the outline plate must be made in pen style with fresh prepared, thick lithographic tusche. Here, too, the stone must be perfect, without any line of fracture, etc. Any dark space of the drawing must be worked out, well finished; yet those spaces, which are to receive a bright, clear and medium tone—omit. Mistakes must not be made, nor scraped, and try as much as possible to avoid any touching of the stone with the fingers. After the drawing is completed, take in a cup a solution of recently dissolved gum arabic with the finest of red-chalk powder. With a very soft brush cover those spaces which are not to receive lines. Here too, do everything with exactitude, as every mistake must be avoided. There is no possible way, as some suppose, to wash it off, as wherever there is a solution of gum, the cross-strokes

hold it either too fast or not at all. The covering should not be laid on too heavily; it is entirely sufficient if it is only slightly coated. After the gum has dried, take the transfer that has been made in the meanwhile upon wet paper; put on the stone so that the lines come in a perpendicular way right on the picture. The passage through the press is exactly the same as with any other reprint; four to five rotations suffice. Then the reprinting paper is to be softened with cold water and the rest of the gum, etc., taken off from the stone with a soft sponge and plenty of water. Now, after the stone has been dried with a slip, the gumming begins and when it is dry, rub the lines carefully up while the Tusche drawing is yet on the stone. This must be carefully done, so that the new reprinted lines can stand the operation. Finally, when everything has been done satisfactorily, the necessary number of the lines rubbed up, it must be carefully washed off with clean water and the impression rubbed in with soapstone.

The stone must then be laid on a table in a level position and poured over with a solution of one part pure acetic acid and sixty parts river or rain water. It should remain thus for about two or three minutes, then the solution should be poured off and the stone well washed over with pure water. It is better to do it under a water conduit, but without a sharp flush—just enough to take away all the little remaining parts of acid. The stone must then be made dry, in order to again cover with a solution of gum all parts which are not to receive any level lines. The process here is exactly the same as described before, with the only difference, that the stone must be prepared by the printer after passing through the press, and the drawing sheets to be put before in a level position. The purpose of pouring over with acid-water is simply to make the surface of the stone again susceptible for grease after it has lost its susceptibility by gumming. If by accident the lines do not stand right, then the stone should not be gummed for some time. Such, however, has never happened to me. I always watch the whole proceeding carefully and pay attention to the strictest cleanliness of rags and sponges in use; also, that only the best kind of fresh gum arabic, recently dissolved, is to be used. To be sure, the printer's exactness in love and understanding of this work has a good deal to do with it.

Only after the drawing has been accomplished satisfactorily, can the reprinting process upon the zinc plate take place—if the work is to be used for zincographic purposes, and, after the warm plate, which before was pounced with asphalt or colophonium powder, is cooled off, cut lightly with a jagged scraper, in order to give a better appearance to the whole picture. What still remains is to give a few hints in regard to the best reprinting paper to be used for this purpose. I use "Chinese Imitation" (and much prefer it to any other), a kind of paper sold by Senefelder, Frankfort-on-the-Main. This paper is easy to soften soon after the reprint has been executed, which, indeed, is of great importance for this work. Altogether, only those kinds of papers are to be preferred which can be quickly taken off from the stone. In conclusion of the whole, I shall give a few

remarks in regard to the preparation of the lines in asphalt-ground; such as may be useful for other kinds of lithographic work in this line. The following is the direction for etching asphalt: After the engraving has been surrounded by lines, put around the stone a wax border, to prevent the acid-water from running off from the borders of the stone. But this being a wearisome job, requiring a good deal of time, I thought to avoid this manipulation altogether. After varnishing the stone with lac and the drawing lined, I cover every part which will receive no lines. I thus treat the whole free space of the stone out to the edge. For covering I use asphalt loosed in turpentine or pure benzole. When everything is dry the etching can begin in the following manner: In an etching pan everyone can easily prepare for himself at little expense—put acid-water in the before mentioned proportion; lay two strips of wood on the floor and the stone upon them, but so that the etching surface be at the bottom. The pan must be a little larger than the stone, so that the work can be done comfortably.—*Freie Kunste.*

A Novel Lettering Machine.

AN ingenious and useful little machine, which promises to be of the greatest service to the lithographer for the lettering of maps, plans, charts, or any irregular work the disposition of which renders ordinary typographic transfers unsuitable. The machine is compact and neat in appearance, simple in action, and easy in working. Various styles and sizes of letter are available. The alphabet is arranged round the circumference of a wheel in a similar manner to the dates on a dating wheel, and the type may be removed and replaced by a different size as required. In actual work a number of typeholders, each with its different fount of type, are used at the same time, so that the operator can rapidly and neatly letter any piece of "display" work. The typeholders are placed in position on the machine, and, by simply pressing down, imprint a letter; on the pressure being released the letter rises and the next one is inked and brought down in its place in the line. The keys are regulated by a pointer, by means of which the letters can be placed close together or spaced wide. An ingenious attachment in the form of a wheel allows of consecutive numbering being done. The mechanism connected with this wheel is delicately and ingeniously contrived, the figures being as small as nonpareil type and perfectly clear. By means of guides and rackwork the lettering—which, by the way, is beautifully clear and sharp—can be put in any position on a map or plan, at any angle, in a curve, or in an unlimited variety of shapes and styles. The invention is of Italian origin, and the Italian Government have already adopted it in all departments where such work is required. An inspection of the invention, at the office of Mr. H. A. Sanders, 23 Budge-row, E.C., afforded every evidence of the ease, rapidity, and exactness with which it could be worked, to say nothing of the great saving of time over hand work, the inventor claiming that the work of about ten men can be done with one machine.

A Substitute for Grinding Litho Stone.

HAN invention has been patented in England by Emil and Richard Arnold, of Leipzig, for a composition for preparing lithographic stones and plates for printing without the laborious process of grinding. The liquid is composed of bi-oxalate of potash, pulverised pumice stone, alum, chloride of magnesium, strong vinegar, water, and sulphuric ether. The proportions are:—Four parts (by volume) of pulverised bi-oxalate of potash, six parts of pulverised pumice stone, ten parts of pulverised alum, seven parts of chloride of magnesium, thirty-three parts of strong vinegar (containing seven per cent. of acetic acid), thirty-six parts of water, and four parts of sulphuric ether. Before using the mixture, it should be strongly agitated in order to prevent the ingredients from being poured out one after the other according to their specific weight. The liquid is employed in the following manner:—The surface of the stone or plate is washed first with turpentine oil, or with a similar oil, in order to remove the ink, then the liquid, composed as above, is poured on the plate and rubbed on its whole surface with a piece of felt or other fabric. This operation will last from two to three minutes, according to the size of the plate. The various substances which may still adhere to the latter, such as grease, glue, acid, compounds, traces of ink, are entirely removed by this treatment. Finally, the plate is thoroughly rinsed with pure water, and when dry may be used immediately for another impression.

AN electrical method of taking pictures of coins and all similar objects has been devised by the Rev. F. J. Smith, Millard lecturer in mechanics at Trinity College, Oxford. The coin, medal, or engraved plate of which a figure is required, is made to form one of the metallic coatings of an electrical condenser; a photographic plate, or a piece of bromide paper, being placed between the two. When a condenser so arranged is subjected to rapid charge and discharge, by connecting the coatings with the terminals of an induction coil, or a similar source of electricity, for a fraction of a second, the prepared surface of the dry plate is chemically altered, and a picture of the coin or medal will be found upon it when the plate has been developed in the usual manner.

Invention says that a paper from which ink writing may be erased with a moist sponge seems to have excited considerable apprehension in Germany, where it has not only been refused a patent, but its manufacture and sale have been declared unlawful. The product appears exactly like ordinary paper, and is made of the same ingredients with the addition of asbestos and parchment-glue. After rolling, the pulp is immersed for a few seconds in concentrated sulphuric acid diluted with ten or fifteen per cent. of water, and is then pressed between glass rollers, and passed successively through water, ammonia solution, and a second time through water. It is next strongly pressed by rolling, and is finally dried on rollers of felt and heated metal.

Isochromatic Photography.

BY G. CRAMER.

[READ BEFORE THE PHOTOGRAPHIC CONGRESS, CHICAGO, 1893.]



MONG the great discoveries and achievements that characterise our present century, and have accomplished results never before dreamed of and formerly deemed impossible, photography holds a prominent place in practical utility, and as a helpmate to art and science.

Portraiture has been brought to simplicity, and in the fraction of a second we can now secure the features of those who are dear to us. Foreign countries and nations are brought to our sight in pictures produced by the camera; movements of animals, too quick to be distinguished by the human eye, are truly and accurately recorded by the highly sensitive photo dry plate, the stars are photographed as well as the minute bacilli and bacteriae, whose multitudes inhabit the drops of water and the cells of animal life, and which, in many instances, are the causes of disease heretofore unknown.

Since photography has rendered it possible to secure the rays of light to the sensitive plate, it has been the aim of scientists and practical workers to bring it to perfection, and the greatest improvements have been achieved in the preparation of dry plates ready for use and of the utmost sensitiveness. The greatest desideratum, to obtain photographs in natural colours, is now brought within the reach of possibility, as shown by the fine specimens of reproductions which are on exhibition in the photographic department of the great World's Exposition, and the time may not be far distant that portraits and landscapes will be photographed in all the beautiful tints and colours as seen in nature. The most important step in this direction was the production of colour-sensitive plates by which one of the shortcomings of photography is corrected, that is the insensitiveness of the ordinary plates to the yellow, orange, and red colours, which cause these colours to appear much darker, while the blue and violet appear much too light in the ordinary photograph.

The aim of isochromatic or orthochromatic photography is the production of plates equally sensitive to the different rays of the spectrum, so that in the monochrome of the finished picture all the colours are rendered equally correct in their respective values.

This colour sensitiveness is obtained by the addition of certain ingredients, mostly of the eosin group of aniline dyes to the sensitive bromide of silver emulsion, and the plates so prepared are called isochromatic or orthochromatic.

A great drawback to the introduction of the isochromatic plates into general use has been the necessity of a colour screen in order to obtain the isochromatic effect. A yellow glass has had to be placed before or

at the back of the lens, or a yellow pellicle in place of the diaphragm, to filter the light and to subdue the greater actinic power of the blue and violet rays. The isochromatic effect being increased in the same proportion as a screen of deeper yellow colour is used, it necessarily follows that the required exposure is prolonged in the same ratio, and to such a degree that the use of a colour screen for portrait work and instantaneous exposure is out of the question. If the yellow screen is not perfectly even in structure and thickness and absolutely plain it will cause distortion of the image by aberration. Change of chemical focus and reflection may also be caused by its use, and therefore it is apparent that plates which produce the most isochromatic effect without the aid of a colour screen are the most valuable.

In portrait photography the blue eyes and auburn hair are rendered more truthfully; imperfections in the complexion, such as freckles, are less noticeable, and dresses of any colour are photographed correctly, so that ladies need no longer consult the photographer as to what colour of dress to wear when having their pictures taken.

In landscape photography the main advantage of the isochromatic plate is that distant objects are photographed much more distinctly than with the ordinary plates. A slight haziness in the atmosphere is neutralised by the use of an isochromatic plate, while an ordinary plate would not produce any satisfactory result under the same circumstances. White clouds in a blue sky cannot be photographed except with the isochromatic plates, and how much clouds add to the beauty of a landscape is known to everybody. In sunset scenes the superiority of the isochromatic plate is as apparent as in the autumn landscapes with their wealth of yellow and orange-tinted foliage.

In seascapes or marine views the horizon is not lost, water and sky being properly rendered.

In commercial photography the instances where isochromatic plates should be used are too numerous to mention. Wood work, which is generally of a yellowish tint, is photographed more perfectly, inscriptions on wagons, railroad cars, samples, floral designs, etc., which may not show at all when photographed with an ordinary plate, are perfectly reproduced.

Now for the copying of paintings in oil or aquarelle nothing but an isochromatic plate should be used, and its advantage for this class of work is most strikingly apparent. In an old oil painting the lights are generally yellow, while the half-tones are of a bluish tint. It is impossible to obtain a good copy of such a painting with an ordinary plate. Plates of full isochromatic effect are necessary for this purpose.

Another advantage of the isochromatic over the ordinary plate is its great sensitiveness when the light is yellow, as is frequently the case in fall when the sky is cloudless, or in photographing by gaslight.

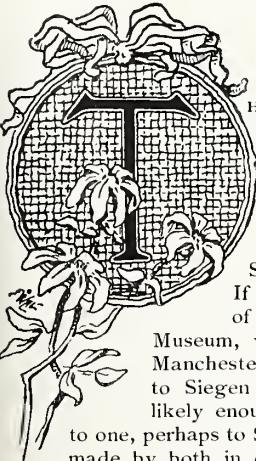
I have now said enough of the advantages of isochromatic plates, and beg to be excused if I have made statements of facts supposed to be well known, but the isochromatic plates being undoubtedly the plates of the future, it seems to me that their full value should be more generally understood and appreciated.

Etching, Drypoint, Mezzotint.

BY HUGH PATON,

Associate of the Royal Society of Painter-Printers.

MEZZOTINT.



THE art of engraving in mezzotint was discovered about the year 1611, and was suggested by the corrosion of metal on the stock of a gun. The discovery is attributed by authorities both to Prince Rupert and to Louis Siegen, a lieutenant in his service. If I remember rightly, Mr. Fagan, of the Print Room of the British Museum, when lecturing on the subject in Manchester, about April last, attributed it to Siegen without any qualification. It is likely enough that the idea was suggested to one, perhaps to Siegen, and that experiments were made by both in co-operation. However this may be, the art had many fascinating qualities, and it soon established itself as a means of expression in the hands of the artist engraver. It filled a gap in the engraver's art by supplying a means of engraving in tone; and just as, towards the end of the seventeenth and in the beginning of the eighteenth centuries, the art of etching received a powerful impetus, owing to the fact that it was peculiarly adapted for the reproduction of the style of the painters of that period, so mezzotint engraving has owed much to its adaptability to the reproduction of the works of Sir Joshua Reynolds and Gainsborough. The art has been chiefly associated in this country with these two names, and attained its full maturity at, and shortly after, their time. Mr. Hamerton states that over a hundred mezzotint engravers have employed themselves upon the reproduction of the works of Sir Joshua alone. Again, at a later period, Turner made use of it for the famous *Liber Studiorum* plates, but in this case for the light and shade only; he supplemented the tone process with strongly etched organic lines, with what powerful effect the student of the famous plates well knows.

METHOD OF GROUNDING THE PLATES.

Mezzotint is the art of engraving upon metal in tones. This definition, however, like that which I gave of drypoint, is incomplete, inasmuch as there are other methods of engraving in tones, as, for example, aquatint, whereas use and wont has applied the name to one particular method. The method of grounding or toning the plate for mezzotint is as follows. A tool is used called a "rocker" or "cradle," the end of it being exactly like the rocker of a child's cradle in shape. Imagine a short chisel, two and a half inches wide, the end of which is rounded to about the same extent as a two and a half inch section of an ordinary breakfast plate. This tool is sharpened on one side exactly like an ordinary joiner's chisel. On the back it is serrated with engraved parallel lines running lengthwise. These may be forty or upwards to the inch, a good size for ordinary use being sixty;

they are made up to 120. With a back of this nature it is manifest that, sharpened in the manner of an ordinary chisel, the end does not present the usual smooth cutting edge, but a row of tiny teeth. These, as they wear, can be renewed by sharpening in the usual way. This rocker is set in a stumpy wooden handle of a size to suit the hand. The plate is ground by working the tool over it with a rocking motion, each stroke progressing slightly upon the previous one and making its hundred and odd indentations. The plate has to be gone over many times, first along, then across, then diagonally, and so on; Mr. Hamerton estimates that it has to be covered some eighty times in order to give a good rich ground. The nature of the indentation made by each tooth is that of a slight hollow with a burr on its edge, like the shallow miniature crater of a volcano. This process, when carried to a sufficient extent, that is until all sign of the original polished surface is lost, gives a surface of uniform roughness somewhat like that of a piece of fine sandstone. This holds ink well, and when printed gives a rich, deep, even black.

EXECUTION OF THE DESIGN.

In order to work out his design the artist proceeds to remove the ground by means of scrapers. These are of two kinds, the bayonet shaped scraper already mentioned, and the other a flat shaped strip of steel, some six inches long and half an inch wide, one end of which is shaped something like a willow leaf, and sharpened on both edges. With these tools kept sharp and in good order, the roughened surface of the copper can be removed to any extent desired. The greater the amount of burr removed the lighter the tone in the proof. This reduction of the prepared surface must be done carefully, for it is easy to remove too much, and not easy to renew it when overdone. The highest lights are got by polishing with the burnisher after the scraper has been used as far as can be on those parts of the copper desired to print white. The artist begins by scraping away the ground immediately around such parts as he desires to keep perfectly black, being, of course, careful not to remove it too much for the tone of the objects immediately behind. Theoretically, he reduces the whole plate except the strongest darks to the next degree lighter, and then again to the next lighter than that, reserving in turn all half darks, and so he proceeds by degrees to the lightest stages which the scraper will give him. But in actual practice he will scrape lightly or heavily as the need of the moment requires, always on negative principles, feeling his way to the general effect. With the willow leaf tool in good order a surface can be obtained that prints almost pure white, and requires less of the burnisher than might be supposed.

THE PROOF.

Mezzotint, in common with drypoint, enjoys the advantage that a proof can be taken during progress to show results, and several are usually found to be necessary. But inasmuch as the richness of the black in the proof is obtained from the burr, it is advisable to avoid taking more proofs than are really necessary, for the burr wears with surprising

rapidity. The same advice that applies in drypoint applies here; carry the work on the plate as far as you can at each stage, and take as few proofs as possible. The method also of rubbing a little printer's ink or black paint into the surface of the plate as you go along enables you, as when working in drypoint, to keep in touch with the progress you are making. You see the result to a certain extent and soon learn to judge very nearly the actual state of the plate. When the plate is completed it may be steeled. This affords partial protection to the burr. Without it it may not be possible to get more than twenty-five or thirty good proofs before the plate shows perceptible deterioration. For the purposes of an edition, steeling may protect the burr in drypoint and mezzotint, on the authority of Mr. Goulding, up to a thousand proofs; sometimes, however, not so much. It can never protect it to the same extent as it can an etched plate, where there is no burr to wear down.

COST OF THE GROUND.

From the foregoing it will be manifest that the essential thing about the process is to obtain a ground that will print a rich, even black, and that can at the same time be removed as required with a reasonable expenditure of labour in scraping and burnishing. Now one or two things remain to be said about this method of grounding the plate, which are usually ignored in manuals on the subject. The process is very laborious; it is a matter of a good few hours to ground even a small plate, and of days to ground a larger one; and besides the time the tax on the muscles is considerable. One wants to change hands every few minutes, in half an hour one wants a rest, and in an hour one delegates the work to someone else! I know men who confess to having grounded one plate, but who vow they will never ground another. They prefer to send their plates to the professional layer of mezzotint ground. There are several of these, and by the kindness of Mr. Goulding, the printer, I am able to append one or two names. These lighten the labour by mechanical means, as for example by fixing the tool to the end of a pole several feet long, the other end being fastened to the worktable, and the whole so arranged that the rocking of the tool on the plate can be done with greater regularity and precision than by hand. Regularity of quality in the ground is essential. This process, however, if a saving of labour to the artist, involves an expense that is considerable. The cost of grounding the plate in this way is fourpence per square inch. Now, the little plate that furnishes my illustration is only $2\frac{1}{2} + 4$ -in., but it has a surface of ten square inches, and costs $\frac{3}{4}$, besides the original cost and postage. Or a plate 6×8 -in., which is not by any means a large one, has a surface of forty-eight square inches, and costs 16/-, say about six times the original cost of the copper. This is a large sum to pay, especially with the possibility in view, not to say probability, of the plate being spoiled at the finish. Now, while this to the professional artist, who has an important plate to execute, is a matter of small moment, it is sufficiently serious an expense to stand in the way of freedom of experiment in ordinary hands. I have no doubt whatever that this cause has

operated in numberless instances against tentative effort in this most fascinating branch of the etcher's art. It is much as if charcoal were an expensive article, and its use denied to all except the very few among art students on the score of expense; for, while the etching needle may be compared with the pen or the pencil, mezzotint may be regarded as the equivalent upon metal of charcoal upon ordinary paper. It has all the fascinating qualities of charcoal, while it has in addition the same superiority in richness and force over the charcoal that the etched line has over the pen or pencil one.

THE SANDPAPER PROCESS.

In these circumstances it is not to be wondered at that many experiments have been made with the view of obtaining a satisfactory ground by simpler means. There is a method, attributed, I believe, to Professor Legros, which consists in grounding the plate as for etching, and passing it through the press a few times with a sheet of sandpaper turned down upon it. The particles of glass with which the sandpaper is prepared penetrate the wax ground, and if acid be then applied, a ground can be bitten in the same manner as in etching. I am not able to tell you from actual experience whether this ground is satisfactory or not. I find some difficulty in getting a tone that is black enough in the proof: the spots are not close enough and the white paper shows between. My own experiments have been made in the simpler direction of passing the plate through the press with the sandpaper upon the bare surface, allowing the particles of glass to penetrate the copper direct. The two finest qualities usually sold in the shops are the most suitable for this purpose. Cut the sheets into pieces the size of your plate, and pass each piece through the press with the plate under it several times. In this way, at the cost of two or three sheets of the sandpaper and a quarter of an hour's labour at the press, a very fair substitute for the rocker'd ground may be obtained. It is not so rich, not so "velvety" in quality, but it gives a good strong black, and that is the first essential. As compared with the rocker'd ground, its defects are that there is little or no burr, and a corresponding want of richness; also a greater difficulty in getting down to the lighter tones. Indeed, the main defect of the process is the difficulty of getting down to pure lights. The particles of glass make deep and sharp, rather than open and shallow, indentations in the copper, and it is difficult to get entirely rid of these. On the other hand, seeing that the ground has less burr, and is due to the number and closeness of the indentations in the surface of the metal, it is less liable to wear in printing and would probably yield a greater quantity of good proofs. This ground is fairly regular in quality, though it has not the evenness of the rocker'd ground; on the other hand, an artist friend said to me that he preferred it to the rocker'd ground because "it is not so tight." It is sufficiently even for the purpose of ordinary landscape, but for portraiture it might not be considered sufficiently even in tone. I don't know whether this ground could be laid on plates of large size, but I have grounded up to six by eight inches with perfect success. With the qualification that the ground

obtained in this way is not all that might be desired for portraiture or such special purposes, where perfect evenness of quality is required, the sandpaper ground will be found a very fair and cheap substitute for the more expensive rockered ground for all general purposes—landscapes, interiors, and such like.

COMBINATION WITH MEZZOTINT.

The art of etching is that of pure line, that of drypoint line with burr, while the art of mezzotint may be described as that of burr only, or at any rate dot with burr, the dots being so numerous and so closely crowded together as to give a purely tonic result. It might be thought, therefore, that of the two line processes drypoint might best be used in combination with mezzotint, but both are equally suitable, though they must be used in different ways. I have already referred to the *Liber Studiorum* plates of Turner, a few of which were executed by Turner himself, the remainder under his personal direction. These are generally accessible at some of the art galleries or free libraries in the provinces, not to speak, of course, of the National Gallery and the British Museum. There is a collection of the seventy-one plates in the Art Museum at Oldham, for example. In these, the combination of the strongly etched line with the mezzotint ground is powerful to a degree; the reader cannot do better than seek an opportunity to study them. An hour of study will teach more than pages of writing. It will be easy to understand that only the *strong* etched line is of practical use, as the lightly-bitten line would be overwhelmed in laying the mezzotint ground. The etched line, too, must be bitten before the plate is grounded for the mezzotint. After this is laid it is quite impossible to protect it with the etching ground so as to get a clear line in the biting. The acid would play havoc with the rough surface immediately on either side of the line drawn with the needle. Therefore etch your organic lines first, and confine yourself to strongly-bitten ones.

Drypoint, on the other hand, being a process of line with burr, must be added after the ground has been laid and the design to a large extent completed. The drypoint line is not strong enough to stand the mezzotinting; it is too shallow. It would disappear to a great extent under the work of the rocker, and its burr would disappear altogether. In connection with mezzotint, drypoint is mainly useful for the addition of finishing touches: to strengthen, for example, portions that have been over-reduced in the scraping process, and especially to give precision of detail. The point should not be too sharp, otherwise the line is apt to print too sharply black for its surroundings, especially in the middle and lighter tones. A somewhat dull point gives a more harmonious result.

[To be continued.]

We always appreciate, and therefore enjoy, a picture the more in proportion as we discover ourselves, or are shown by others, the why and the wherefore of its excellences, and much of the pleasure it gives us depends on the intellectual enjoyment it affords.—LESLIE.

Manufacture of Celluloid.

So many uses, including various ingenious processes of printing, have been found for celluloid, that a description of its preparation may be of interest. Among the various methods of manufacture, that used by French makers is probably the simplest. A roll of paper is slowly unwound, being at the same time saturated with a mixture of five parts of sulphuric acid and two parts of nitric acid, which falls upon the paper in a fine spray; this changes the cellulose of the paper into proxylin, or gun cotton. The excess of the acid having been expelled by pressure, the paper is washed with plenty of water until all traces of acid have been removed, and it is then reduced to a pulp, and passes on to a bleaching trough. Most of the water having been got rid of by means of a strainer, the pulp is mixed with from twenty to forty per cent. of its weight of camphor, and the mixture thoroughly triturated under mill stones. The necessary colouring has been added in the form of powder, a second mixing and grinding follows. The finely divided pulp is then spread out in thin layers on slabs, then from twenty to twenty-five of these layers are placed in a uniform manner in a hydraulic press, separated from one another by some sheets of thick blotting paper, and are subjected to a pressure of some one hundred and fifty atmospheres, this pressure being continued until all traces of moisture are found to have been got rid of. In this condition the material is passed between rollers heated to between one hundred and forty and one hundred and fifty degrees, F., whence it issues in the form of elastic sheets.

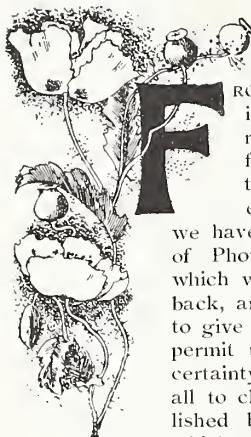
THE GRAMMAR OF ORNAMENT.—The following paragraph recently appeared in *The Daily Telegraph*: “On the recommendation of the Prime Minister the sum of £100 has been granted out of the Royal Bounty Fund to Mr. Albert H. Warren, in consideration of his services to art. Mr. Warren has long been favourably known by his skill in illumination, and, among other works, as the compiler and illustrator of the ‘Grammar of Ornament,’ edited by the late Mr. Owen Jones. Mr. John B. Day, who was one of the original publishers of the work, wrote in reply that to Owen Jones alone was due the credit of the production. In the original preface to the work, after acknowledging the assistance of various eminent contributors, Owen Jones continues, ‘The remainder of the drawings have been chiefly executed by my pupils, Mr. A. Warren and Mr. C. Aubert, who, with Mr. Stubbs, have reduced the whole of the original drawings, and prepared them for publication.’ This hardly seems to support Mr. Warren’s claim to having taken a lion’s share in the production.”

THE offices of the (London) Printing and Allied Trades Association have been again removed, this time to 24 Bedford-street, Strand (telephone No. 3,954). The secretary, Mr. H. Vane Stow, in announcing the change to employers, advocates the claims of the Caxton Convalescent Home, which needs an increase of support.

Photography in Natural Colours.

By A. & L. LUMIERE.

After the method of M. Lippman.



ROM the beginning of our experiences in colour photography, after that remarkable method invented by Professor Lippman, it was our intention to make the process known which enabled us to obtain proofs which we have presented to the French Society of Photography. But the irregularities which we then encountered have kept us back, and we preferred to wait in order to give finally exact indications which will permit us to obtain good results with a certainty. We may be permitted first of all to claim priority over the process published by Mr. Valenta, of Vienna, and which consists of mixing two gelatinous emulsions, the one containing a soluble bromide, the other nitrate of silver. We have, in fact, made known in a communication dated March 23rd, 1893, to the Society des Sciences Industrielles of Lyons, the method which we give in the following, and which, as will be seen, differs very little from that published by Mr. Valenta.

The following formulas have been established empirically. That goes without saying. But we have made every effort during the very numerous experiments we have made to proceed methodically, never changing more than one single element at a time; more so as far as it concerns the emulsion than in regard to the developer. Hence, the large number of necessary experiments and the long time which we have sacrificed to them. To obtain the sensitive emulsion it is necessary to prepare the following solutions :—

a Water distilled	... . . . .	40 parts.
Gelatine	... . . . .	20 "
b Water distilled	... . . . .	25 "
Bromide of potass.	... . . . .	2, 3 "
c Water distilled	... . . . .	25 "
Nitrate of silver	... . . . .	3 "

One half of solution *a* is added to solution *c*, the other half is added to solution *b*. Both gelatinous solutions are then mixed by pouring the liquid containing the nitrate of silver into that containing the soluble bromide. Next some convenient colour sensitiser is added: Cyanine, methyl-violet erythrosine, and then the emulsion is filtered and the plates coated. This operation should be performed on the turntable, the temperature of the solution not surpassing forty degrees. The film is allowed to set, and while still jelly the plates are immersed for a very short time in alcohol, a treatment which permits the complete wetting of the surface. Finally, the plates are washed in running water. The film being very thin, the washing requires but a very short time.

This method has the advantage over that of Mr. Valenta, in preventing coarseness of grain of the bromide of silver, a coarseness which results from the washing of the emulsion in bulk and from the heat

necessary in remelting it. It also permits obtaining plates of complete transparency. For the same reason the employment of too large an excess of soluble bromide should be avoided.

After the plates have been sufficiently washed they are put up to dry, and are then, just before using, treated for two minutes in the following solution :—

Water distilled	... . . . .	200 parts.
Nitrate of silver	... . . . .	1 "
Acetic acid	... . . . .	1 "

By this latter treatment the pictures obtained are much more brilliant. It also augments the sensibility, but causes rather rapid decomposition of the sensitive film. The plates are now dried again, and then exposed or printed according to the instructions published by Mr. Lippman. The developer which we always employ is composed as follows :—

SOLUTION 1.

Water	... . . . .	200 parts.
Pyrogallic acid	... . . . .	1 "

SOLUTION 2.

Water	... . . . .	100 parts.
Bromide of potass.	... . . . .	10 "

SOLUTION 3.

Ammonia.

To develop, take :—

Solution 1	... . . . .	10 parts.
Solution 2	... . . . .	15 "
Solution 3	... . . . .	5 "
Water	... . . . .	70 "

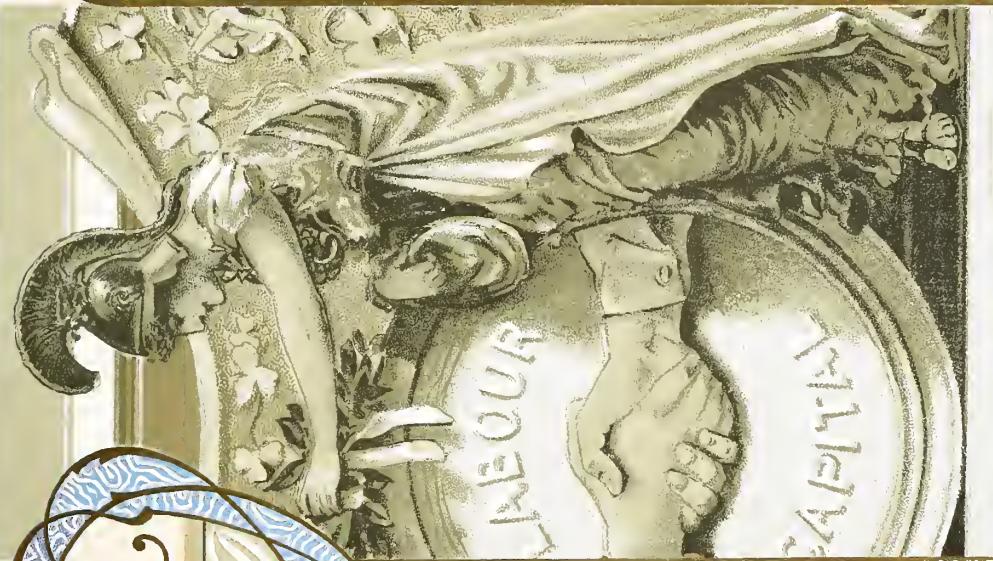
The strength of the ammonia is of some importance, as even slight variations in the above proportions quickly diminish the brilliancy of the colorations. After development the plates are washed, fixed by an immersion from ten to fifteen seconds in a solution of cyanide of potassium, and finally dried.

In photographing any subjects the action of the ultra violet radiations ought to be stopped, and that of the violet and blue radiations diminished by placing in front of the source of illumination in the dark room a cuvette or upright glass bath with parallel sides containing a solution of uranine, primuline, or other convenient yellow.

LUMINOUS PAPER.—There are four combinations of sulphates which, on being exposed for a time to the sunlight, becomes phosphorescent in the dark. These are sulphates of calcium, strontium, barium and zinc. For practical purposes the first is most useful, as mixed with a small quantity of salt of bismuth, it has the property of emitting a violet light for about fourteen hours after a short exposure to the sun. To prepare luminous paper, a little gelatine is dissolved in warm water in the proportion of one pound of gelatine to two quarts of water, to which is added three pounds of the sulphate of calcium and salt of bismuth, and a little glycerine. Two coats of the solution applied warm are sufficient to render the paper quite luminous and show distinctly anything that may be printed thereon in heavy black ink. For paper that is to be exposed in the open air, a little gum lac should be added, and after printing a coat of transparent lac varnish applied to the whole to preserve the paper from the action of the atmosphere.—*Bulletin de l'Imprimerie*.

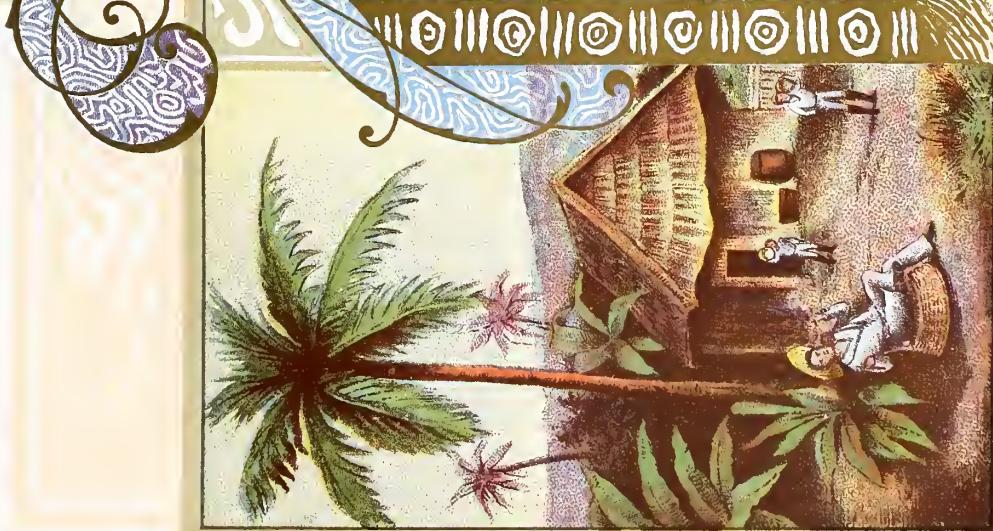


Portion of a Book Cover in Colour



MEN'S EX

Portion of the Diploma of Honor Awarded to
NATIONAL WORKERS' EXHIBITORS



Portion of a Book Cover in Colour



Tinfoil as a Support for Photo-litho Transfers.

[READ BEFORE THE PHOTOGRAPHIC SOCIETY . . .
OF GREAT BRITAIN.]



In the execution of photo-lithographic work, considerable difficulty is sometimes caused by the fact that a transfer prepared in the usual way on paper expands when damped, and also is stretched when pulled through the press in the process of transferring. The image on stone or zinc is therefore distorted, and, in cases in which it is important that the reproduction should be to scale, elaborate precautions must be taken to guard against this. This difficulty is frequently met with in the Lithographic School of the School of Military Engineering, Chatham, which is in my charge. A considerable number of plans and drawings are there reproduced, and in all cases it is desirable that distortion should be avoided. In some cases this is of special importance.

It has occurred to Mr. Husband, who is employed in the school as lithographic printer, that tinfoil might be used instead of paper in the preparation of transfers, so as to prevent distortion, and he, together with some of the military lithographers, has been working out the idea.

Incidentally, various other advantages in the use of tinfoil (besides that of non-distortion) have come to light, as will be seen presently. Mr. Husband was for many years in charge of the Lithographic School while he was a non-commissioned officer and warrant officer in the Royal Engineers, and his name is known in connection with his "papyrotint" process for photo-lithography in half-tone. He, therefore, brings a very large amount of experience to bear on the question. It should be said at once that there is no new principle involved in the process. For line work it is merely a modification of the "papyrotype" process, introduced at the School of Military Engineering by Captain Abney when he held my present appointment, while for half-tone work it is a modification of Mr. Husband's own "papyrotint" process. It is, in fact, quite possible that this identical tinfoil process is in use in other establishments, but I believe that no account of it has ever been published.

The method of procedure is as follows:—

(A) PAPYROTYPE TRANSFERS (FOR LINE SUBJECTS).

A zinc plate, such as is used for zincography, is damped with a dilute solution of gum arabic (say one part in sixty parts of water). A sheet of smooth tinfoil of the size of the transfer required is laid on the zinc plate, and the two are pulled through a lithographic press together. The tinfoil adheres to the zinc plate, which thus enables it to be conveniently held during the process of coating with gelatine.

A solution of chromated gelatine is prepared as follows:—

Gelatine, common flake	1 oz.
Glycerine	2 dr.
Bichromate of potash	40 gr.
Water (measured independently of the other ingredients)	8 oz.

The gelatine is soaked in the water for half an hour (the water being cold); it is then dissolved by heat. When it is thoroughly dissolved the glycerine and bichromate are added, and the whole stirred up together; in three or four minutes the bichromate is dissolved, and the mixture is ready for use.

The above quantity is sufficient to coat about eight sheets of the size of half a sheet of foolscap.

The surface of the tinfoil is then cleaned with a solution of caustic potash (strength about one part to forty parts water) to remove all grease, and the chromated gelatine solution, while still hot, is poured over it in the same way as collodion is used to coat a glass plate in wet-plate photography. The beaker containing the solution is covered with a piece of muslin, so that the liquid may be strained while it is poured out. The zinc must be slightly warmed to prevent the solution setting too quickly. The excess of solution is drained off, and as soon as the gelatine has set the plate is stood up to dry in a dark room. The process of drying takes about four hours at the ordinary temperature. If the room is warmed, it requires, of course, a much shorter time, but the results are inferior, as the transfer does not roll up so clean.

The tinfoil is then peeled off the zinc plate by lifting one corner of it with a knife. It may be kept in this condition about twelve days, or it may be used as soon as it is dry. It is placed in a photographic printing frame and printed in the daylight behind a line negative in the ordinary way until the image is visible in all its details. After printing it is placed in water for three minutes, and then rolled-in as usual with a rather soft lithographic ink of the following composition:—

White virgin wax	1 oz.
Stearine	1 oz.
Common resin	1 oz.
Palm oil	½ oz.
Chalk litho printing ink	4 oz.

The transfer is immersed for three minutes in a solution of bichromate of potash (strength five grains to one ounce of water) and dried in a dark room. It is then exposed to daylight for a period of three minutes or upward, according to the strength of the light, so as to harden the gelatine all over. This action should not, however, be carried too far.

Before transferring, the transfer is damped for about three minutes in a "damping book" (using water only), and it is then pulled through the press on a prepared stone or zinc plate. The after-processes are the same as when a transfer on paper has been used. With care, each sheet of tinfoil can be used a dozen or more times.

Various examples are shown of subjects which have been photo-lithographed or photo-zincographed under identical conditions, except that tinfoil has in some cases been used for the transfers, and in other cases

paper. The stones or plates are quite untouched, and it will be seen that the results given by the metal transfers are sharper and cleaner than those obtained by paper. There is also decidedly less distortion in the former case. In the case of these prints, the images on stone or zinc obtained from the foil transfers are absolutely the same size as the negatives. The images obtained from paper transfers are all stretched to the extent of $\frac{1}{20}$ to $\frac{1}{10}$ of an inch each way, *i.e.*, $\frac{1}{20}$ to $\frac{1}{10}$ of an inch in a length of four to eight inches. The prints could, of course, be greatly improved by cleaning up and working on the stone or zinc, but it has been thought better to show the results obtained without any retouching or cleaning whatever. The cost of the work is practically the same in both methods of transfer.

The *advantages* of the new method of preparing the transfers (as compared with paper transfers) are:—
 (1) The image on stone or zinc is not distorted. The print, therefore, only has the distortion due to the stretching of the print itself in the press, and this can be eliminated by using a sufficiently stout paper and pulling the print dry.
 (2) The work is finer.
 (3) The work is cheaper, as specks, etc., can be more easily removed from the transfer.
 (4) The transfer does not buckle in the printing frame even when it takes a long time to print and the weather is damp.
 (5) Less solution is required to be made for coating a transfer of any given size.
 (6) The transfer dries in about half the time.

There is the slight *disadvantage* that, in the case of zinc work, it is rather difficult to get broad lines to transfer solid; they are apt to require retouching. It is thought that with more experience this difficulty will be overcome, especially if a softer ink is used in rolling up the transfer.

(B) PAPYROTINT TRANSFERS (FOR HALF-TONE SUBJECTS).

The tinfoil is laid on a zinc plate and prepared as if for a line subject; it is coated with a solution made up of:—

Gelatine common flake	2-oz.
Bichromate of potash	40-gr.
Common salt	70-gr.
Calcium chloride	70-gr.
Ferricyanide of potassium	30-gr.
Chrome alum	8-gr.
Water (independently of other constituents) ..	8-oz.

The gelatine is dissolved in the water as in the previous case, and the other ingredients are then added; the foil is dried at a temperature of 70 to 80° F. The coated tinfoil keeps in good condition for about twelve days. The transfer is printed under a half-tone negative, rolled in as for a line subject, and then dried. It is not necessary to immerse in a second bichromate bath. The transfer is damped in a "damping book," using dilute nitric acid (one part to sixty or eighty parts water); this tends to prevent the work becoming blurred through spreading. The transfer is then pulled through the press on a prepared zinc plate or stone, and the after processes are carried out as usual. [Examples were passed round showing how the tinfoil transfers compare with paper transfers.] The cost is practically the same in both cases.

The *advantages* of the use of tinfoil as compared with paper are:—(1) The image on stone or zinc is not distorted. (2) The transfer can be cleaned more easily. (3) The transfer does not buckle in printing. (4) Less gelatine solution is required. (5) The transfer dries in about half the time.

There is one very slight *disadvantage*, viz., that if there are any inequalities in the roller used for rolling in the transfer, the marks produced by them show up more than in the case of paper transfers.

Tinfoil transfers give more contrast in the prints, and this is an advantage as compared with the papyrotint process previously used at the School of Military Engineering, which very often produces too flat a tint.

(C) RETRANSFERS.

Tinfoil may also with advantage be used for retransfer work, by coating it with the composition ordinarily used for retransfer paper. The distortion, which with paper is unavoidable, can in this way be prevented, and this might be a matter of considerable importance. The results are somewhat better than those obtained with ordinary composition paper; but the foil, when coated with composition, has the disadvantage, that it is not quite so easy to store without risk of damage.

(D) OBTAINING SEVERAL RETRANSFERS OF ONE SUBJECT.

If a reversed negative is used, and a tinfoil transfer is prepared as described above, and if this transfer is inked in as usual with transfer ink, a print can be taken from it on transfer paper as in the process of collotype printing. The paper print becomes of course a retransfer, and can be transferred to stone or zinc.

From the same original tinfoil transfer a number of paper retransfers can similarly be obtained. If these are all transferred to stone or zinc, the various stones or plates can, of course, be printed from at the same time.

For line subjects this method has no advantage as regards the final result over the ordinary method of transferring the tinfoil transfer to a stone or plate; but for half-tone subjects it seems to give much sharper and better results than the ordinary method. Also, in any case the retransfer method takes much less time, as the foil can be printed from while still wet, otherwise it has to be dried.

The experiments are not sufficiently advanced to speak positively as to the retransfer method, because up to the present time there has been a difficulty as regards getting a suitable transfer paper. It is believed, however, that this difficulty has now been surmounted.

(E) PROCESS WORK.

One other use of the tinfoil transfer, suggested by Mr. Husband, is as a means of preparing a half-tone process block. If the method is a practical one, it certainly might be of very great importance. I am not able to form an opinion as to whether it could be worked, and we have no facilities at the School of Military Engineering for testing the method. In any case, as process work does not appear to be of any use from a purely military point of view, we should not be able to expend time or money on such experiments.

If a sheet of tinfoil is coated with a gelatine solution, as described above for the half-tone process, a much thicker layer of solution being left on it than is required for lithographic work, the transfer obtained from such a sheet will have a much coarser grain. If such a transfer were transferred to zinc, and the metal etched with an acid, it seems possible that a half-tone process block could be obtained. Assuming that this would give satisfactory results, the method appears to be decidedly simpler than those ordinarily used.

KIND OF FOIL TO BE USED.

The most suitable kind of foil yet found for this work is the 4B foil, supplied by Messrs. Betts & Co., 1 Wharf-road, City-road, N., price 10d. per lb. Three and a half sheets of size 25×18 inches weigh one lb. The foil can be obtained up to 3×2 feet 6 inches in size, and no doubt still larger sheets could be got if required.

The foil contains a considerable quantity of lead. Foil made of pure tin has been tried, and has failed entirely, owing to its being too springy to be manageable. Several samples of pure lead foil have been tried, but without success. In contact with the lead, the chromated gelatine becomes of a greenish colour, and loses its sensitiveness almost entirely.

In the process above described, an immense number of variations are, of course, possible. The formulae and method here given are those which have been found to give the best results, and they may possibly be of interest to some of our members. It is in the hope that this will be the case that I have obtained permission from the military authorities to read this short paper before the society.—CAPTAIN A. M. MANTELL, R.E.

The Zinc Plate.

 INCOGRAPHY, or the art of printing from the surface of a zinc plate, has been practised for upwards of fifty years. It may be cited, as an instance of how hardly prejudice dies, and conservatism gives way to progress, that to-day thousands of operative lithographers set their faces rigidly against its adoption on the ground that it is "a new thing." A new thing! Anathema! The whole art of "chemical printing" is comparatively a "new thing"—less twice the age of zincography. As compared with the older art of letterpress printing it is still quite an infant. It has a good deal yet to do before it overtakes it either. For one thing it has to overcome the foolish prejudice in favour of the cumbersome stone as a printing surface. That stone blocks the way of all progress in speed. Your huge monolith, 60×40, is an impracticable thing—a cumbersome beast that will not move without chain and pulley, or the arms of five or six strong men. And when he is set to a task—work put upon him—you can only get him to move at a fixed slow rate, quite out of keeping with the last decade of the nineteenth century. But a large section of the trade have knelt before this huge stone monster for so many years that they will acknowledge no other medium. To mention the word zinc in some offices

is to call down upon you anathema! And why? Lithography is "stone" printing: substitute zinc or other surface and it is no longer lithography as it has been bequeathed to us. Strictly speaking it is not; it is zincography; but it is equally good, equally easy to practise, more economical, and less laborious. Some have tried it, and failed, say the objectors. Many have tried it, have not failed, but have found it invaluable. Some have discarded the use of stone for originals: some have discarded it altogether. The explanation seems to be that those who have tried zinc with their hands have failed, while those who have tried it with their brains have made a success of it. A well-prepared zinc plate will do all that a well-prepared stone will do, and it will absorb less of capital and rental, costing less and taking up less room. A properly planished zinc plate presents as close and even a surface as a good stone. It will take and retain the finest transfer from copper-plate that you can desire. You can draw upon it direct, or transfer from paper or stone any description of drawing, chalk, line, grain, and stipple. The mechanical stippler can be used, if anything, more effectively on zinc than upon stone, as there is less liability to "spread." You can (if your plates are the right sort of plates) erase, alter, and touch-up with quite the same facility as with stone. They will give as good results from the press or the machine as the best product of Solenhofen, if properly treated; fully as great numbers may be run from them without deterioration. Some users claim that the zinc is much more retentive than stone, but if it only does as well there is no room for grumbling. The time is near when the zinc plate will have to form an important adjunct of every up-to-date litho establishment, for the days of rotary printing are upon us. France, Germany, America, and Great Britain each have their types of rotary zinc plate machines; nothing is more certain than the fact that they will come into pretty extensive use. With letterpress machines travelling at 400 revolutions a minute, lithography cannot afford to stand long upon the flat-bed machines at 800 to 1,100 an hour. The trade must move, and it cannot move while clogged with the litho stone. The Hull Patent Zinc Plate Co., Ltd., have done much to popularise zinc plates by the care with which they prepare them, and the very explicit and lucid instructions they furnish for the guidance of users. They have had a long and uphill fight against indifference of employers and prejudice of operatives, but they have made excellent progress and done good service to the trade.

—*British and Colonial Printer and Stationer.*

BLACK STAIN FOR WOOD.—Extract of logwood, 15 grams; chromate of potash, 2 grams; water, 1 litre. The extract of logwood is dissolved in boiling water, and the chromate then added. The colour of the liquid is a deep violet, which changes to pure black in contact with the wood.—*Science en Famille.*

THE arm of a man, from shoulder to wrist, measures two heads, the hand outstretched is one face-length. A man has thirty-two nose-lengths in his height, and about ten face-lengths.—HUME NISBET.

The Photo-Mechanical Print Procedure to the year 1893.

[READ AT THE CONGRESS OF PHOTOGRAPHERS, HELD AT
CHICAGO, IN AUGUST, 1893.]



THE photographic deep print or copper-plate print is represented through the methods which are known under the name "Heliogravure," and already stand on the highest grade of development. It is the same with the "Lichtdruck," both processes do not show much improvement since 1870, only in the "Heliogravure," the secret and well-guarded methods of Dujardin and Baldur of Paris have been brought to light by a clever and industrious Bohemian, Karl Klie, of Vienna. The entire process consists of putting fine asphalt powder equally on a polished copper plate, to be heated, and to develop on the plate a pigment picture, which has come out through illumination under a positive; this is thereafter etched with a solution of chloride of iron. Goupil, in Paris, has practiced for a long time a process which requires much retouching. He has added glass powder to gelatine and prepared his own pigment papers, which he lighted (under negatives) and exposed on silver copper-plates, and electrotyped the dry relief. The same process has been cultivated by Schreiber, in Vienna, in 1873, only he took a grained skin of gelatine, which he put between the negative and the pigment paper, and very good half-tone plates are yet to be seen in the Imperial State Printing Establishment in Vienna. Dr. E. Albert, in Munich, produced lately a grained gelatine relief with the well-known "Runzelgrain" of the gelatine (Pretschmanier); the same process was practiced in 1870, by Rodriguez and Leipold in Lisbon, but with no success. Obernetter, in Munich, has used a process for many years, which consists of a collodion picture out of iodine of silver, transferred on a copper plate; the silver will reduce itself and etch the copper.

There are now experiments made with a new deep print process. A developed pigment relief in wet condition is powdered with the finest asphalt powder; after drying the powder is removed, and it remains a grained gelatine relief, which is electrotyped.

The photo-mechanical process for printing presses has made great headway lately, and pen drawings have reached the highest stage of perfection. Half-tone originals must be laid out in lines first, and this is done with the aid of transparent Rasterplates or nets, which have been perfected of late.

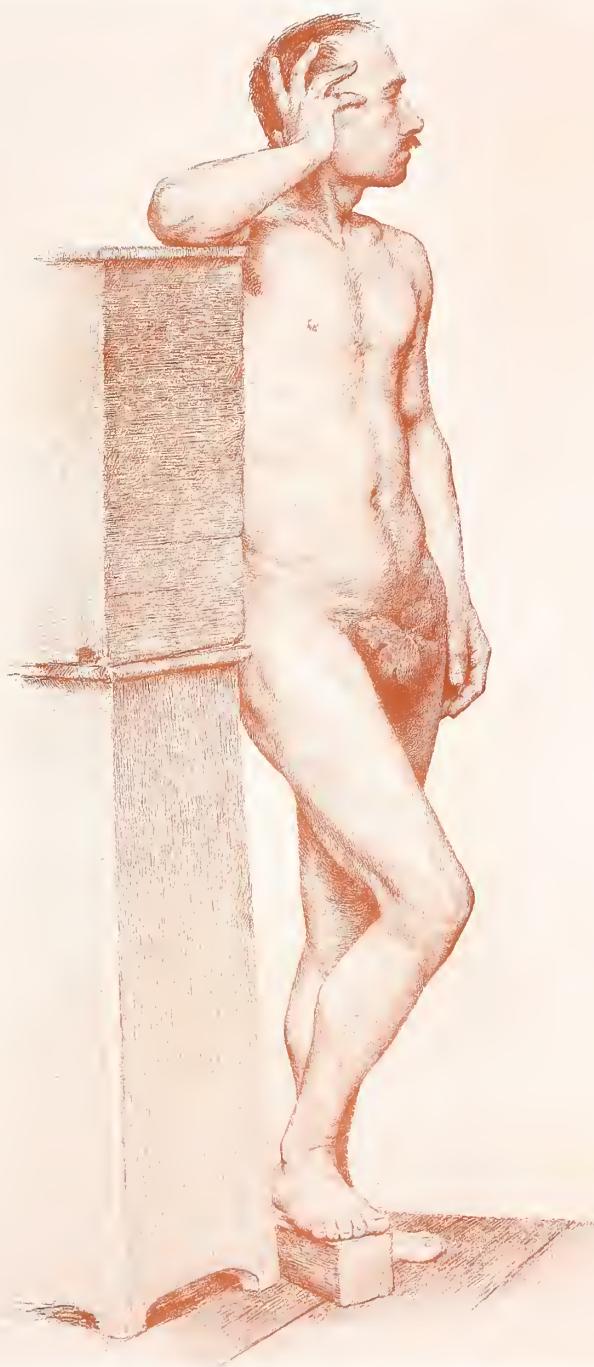
The writer of this built a ruling machine four years ago, and obtained faultless nets drawn on glass, which are to be glued or cemented between two glass plates, and which are perfect, and in use in Prague, by Husnik & Hausler. Loewy, in America, has the same cemented and perfect nets, and they are generally used. Meisenbach, in Munich, was the first man who practiced this method with success; after him

came Angerer & Göschl, in Vienna, Goupil in Paris, Husnik & Hausler in Prague, and Riffarth in Berlin. The writer has perfected the collotype, and samples are found in all public magazines. At present experiments are made to print three or more colours on the printing press, and particular merit is due to Dr. Vogel in Berlin. His methods are exercised by Kurtz in America, and Buchsenschein in Berlin. Up to date it is not yet perfect; there is need of the clear, green colour, which now holds too much red.

My son, Jaroslav Husnik, has greatly improved the photographic three-colour print, and faultless pictures are the result, which the firm of Husnik and Hausler execute.—JACOB HUSNIK.

THE natural result of monopoly is mediocrity, and even rank badness, and not infrequently the mediocrity and badness are the primary cause of the monopoly, or, rather, of there being any call for it, and, if we may judge by the remarks of the *Scientific American*, the monopoly over the taking and sale of photographs at the World's Fair has its usual accompaniment. Our contemporary says:—"It is not possible to procure thoroughly good official photographs at the World's Columbian Exposition. The workmanship is in no respect better than was to be found at the Centennial. In fact, it is not as good, considering the fact that so many years have intervened and that so many improved processes have since been introduced. The subjects are selected with a lack of judgment and taste, and the developing is of ordinary quality. An exhibition by amateur photographers in any part of the country, judging by the samples that have been seen by members of photographic societies, could show specimens of work superior to the pictures offered for sale at the World's Columbian Exposition. The photographic department is such an appalling failure from the standpoint of the photographer, whether he be amateur or professional, that some public protest should be made against this condition of things before it is too late to have the necessary photographs taken to preserve some of the beauties of the Exposition." This is only another instance of Yankee "smartness" over-reaching itself, and of Brother Jonathan showing us how *not* to do things.

"HIGH ART."—A correspondent thinks that, judging from an advertisement in a London weekly, the professional has not much to grumble at in the amateur when the professional descends to the method he draws attention to. This is set forth in an advertisement in which it is said that negatives will be taken at sitter's residence, and six cabinets and one enlargement, painted in oil, will be given for half-a-guinea! This is "high art" with a vengeance, and if the quality is on a par with the price, it is not likely, we should say, that repeat orders would be given. It appears to us that it would be better to do less business at a higher price, for at the figure named justice cannot be done, and it is a mere flight of fancy to suppose that the enlargement would be a work of art, or a painting in oil. But the British public dearly loves to pay for what it does not get.



Collotype by Robert Gardner & Co., Glasgow

COLLOTYPE (continued).
CHAPTER XVI.
PRINTING FROM COLLOTYPE FILMS.


IN the last chapters the full details for securing a photographic print upon the film, and the appliances to be used, were given. The present chapter deals with the use of the appliances mentioned. In the first place, let every appliance be scrupulously clean and free from dust : let the collotype support, the glass plate on which it is spread, be most carefully cleared from the very smallest particle of the gelatinous film material, or when under pressure the glass will break. Everything else being in order, the film with the picture upon it as described in chapter XIV. should be again soaked in cold water for an hour ; then dried by a careful use of sponge, or soft rag, or drying rollers, and subsequently levelled and treated with a mixture of :—

Glycerine	5-oz.
Ox-gall	10 drops.
Water	10-oz.

or a mixture consisting of a "stock" solution of :—

Glycerine	15-oz.
Liquid ammonia	5-oz.
Nitrate of lime	½-oz.
Water	25-oz.

of which take five or six parts to water one hundred parts, to form the necessary solution ; or a mixture composed of :—

Glycerine	1 litre.
Common salt	3 grammes.
Water	600 c.c.

Either of these should be flooded upon the film and allowed to act for half an hour or more. Then the mixture—usually known as the etcher—is dabbed off with a sponge, and the film dried with a sponge, soft rag, or drying roller.

The ink may be thinned with turpentine in the ordinary way upon the slab, or it may be thinned down by taking a small amount of best chalk ink, about the size of a walnut, working into it one-quarter the amount of middle varnish, adding a drop of olive oil, and finally a few drops of French turpentine. With this the leather roller can be charged somewhat heavily, and the film carefully rolled, using a moderately heavy pressure and travelling somewhat

slowly over the surface. In this way the heavy portions of the picture will become apparent first, and probably the edges of the plate will become dirty. As in lithographic printing, slow heavy rolling deposits ink fully, and frequently dirties the white portions of the picture, whilst quicker rolling clears off the ink and robs it of its heavy supply. It is impossible to give more than the briefest indications as to rolling up, as a little practice will soon shew where the faults lie, and will suggest their own remedies. The rolling should be continued until the middle tones become distinct, at the expense of the shadows being somewhat overcharged. Then, with the glue roller lightly charged with a thinner ink, the picture should be carefully rolled until the ink has been removed from the shadows and has been deposited on the very lightest portions of the picture where, hitherto, ink had not taken hold.

The collotype plate, it is assumed, has been set in position in one of the methods already described, and unless the conditions are very favourable, it is worse than useless to attempt to use a mask which is not properly hinged to the press bed in some way. The mask must be kept just off the film, if that can be managed, for if it be brought continually down on the gelatine, it tends to cause it to wrinkle, crease, and tear, as well as injure the film itself. If the mask frame exactly fits upon the collotype plate, or can be registered to the plate on each occasion a print is taken, then a loose mask may be used ; but as such conditions are difficult to obtain, it is a great saving of labour and time to have the mask hinged to the bed. In either case, when the picture on the film has been satisfactorily rolled up and a few rough proofs taken, the mask must be placed in position and brought down upon the picture. An impression of the picture being taken upon the mask sheet, the central opening can then be cut to exactly suit the requirements of the finished prints. In cutting the aperture it is necessary to use a perfect straight-edge and a very keen knife ; and having calculated the exact size of the picture required, allow, in cutting, that the aperture shall be a shade larger, so that the thickness of the mask shall be compensated by the extension of the opening. The mask is also the means by which all registering is accomplished, and it will therefore require to be marked on the back for the lay of all the paper. The marking must be, if anything, more carefully performed than on stone, and an ordinary soft lead pencil used, to prevent cutting the mask.

In printing, the plate is rolled up, then the mask is lowered upon it ; the paper is laid upon the mask and a soft backing of plate or blotting paper put upon it. The tympan is lowered and it is run through the press as in lithography. It is almost needless to say that the collotype film and glass are of a more delicate nature than stone, and in proportion to the apparent possibility of injury, so much greater care be exercised in printing. Pressure for collotype must not be as heavy as for lithographic printing, and it must be gradually tested by successive proofs until the proper force is ascertained. An experienced lithographic printer will be able to apply his knowledge with advantage to collotype printing.

In the course of printing, if the first impressions are patchy it is generally due to want of pressure. If they appear thin and flat, the ink itself is too thin. Collotype ink must be of full power, for the amount which is rolled upon the picture is so small that each particle must possess its full value to have a proper effect in printing. The amount of varnish must be small, and the ink itself the best that can be obtained. Another cause of flatness in a print is deficient soaking of the film in the etcher. As soon as this becomes apparent by the edges of the film taking ink also, the picture should be washed out with turpentine and a soft rag, then dried, and allowed to soak for half an hour or more in the etcher. After such treatment it must be dried and rolled up as before.

Again, when collotype pictures have been produced by over-exposure under the negative, there is a tendency to flatness, which may be counteracted by damping the film more frequently. Damping the film is done with the etcher, and its frequency depends upon the quality of the gelatine in the film and the quantity of glycerine in the etcher. It is very seldom that damping is necessary between each impression, such being the case, probably, only where the prints run flat, or where the subject contains a quantity of absolute white space. Unevenness of damping at the commencement of printing causes the prints to be patchy, and has frequently caused old collotype films to produce negative prints until the damping solution has thoroughly soaked in. It is difficult to gauge accurately the amount of damping requisite, and it remains to use such means as will counteract faults arising from over or under-damping. If the picture loses its half tones by over-damping, the film must be dabbed dry and immersed in alcohol for not more than five minutes. The alcohol will draw out the water and leave the film comparatively dry. Too much damping, coupled with the film being rather thick, causes the picture to refuse to take the ink, more especially where the picture consists of delicate half tones accompanied by broad flat blacks such as strong titles. This should be overcome in the photographic printing by shading the printing frame, and thus preventing too violent contrasts.

Prints may be flat from the film being thin, or devoid of isinglass, or by the negative being flat. If from the two first causes, the damping should be more frequent. If, however, the prints become flat by taking too much ink, and consequently the high lights become also dulled by tinting, it may arise from over-exposure under the negative, or from the film being too thin, or from damping continually and using a stiff ink. To remedy this, there are the following methods:—First try simply washing with dilute ammonia solution. If that prove ineffective, wash out with petroleum, and subsequently wash with glycerine and water. This is usually a good remedy, and allows of immediate printing. But in bad cases the picture should be washed out with turpentine, dabbed dry, and etched with a mixture of:—

Glycerine	1-oz.
Cyanide of potassium	2 grains.
Water	4-oz.

Such an etching must be followed quickly with a wash of water, as in lithographic stone etching, and the film allowed to dry. Sometimes after such treatment the film is so moist that the picture will not print. If that be so, allow the film to soak in alcohol for three or four minutes, to draw off the water. It is then ready to proceed with.

As with grained stone work, so it is with collotype printing to some extent; if it be required to lighten some portion of the picture, the etcher may be left on that portion for a quarter of an hour, and afterwards the whole plate treated with the etcher for a few minutes before rolling up.

A fault in printing which cannot very well be overcome, except at the expense of the picture, is that due to the film containing a larger proportion of isinglass than ordinarily used. The isinglass causes the paper to adhere to the film, and this adherence is most likely to result in damage to the film unless the greatest care be exercised. Dull enamel papers lend themselves to this fault, and to avoid it use a harder paper, such as a strong well-sized paper, if a strong under-sized or half-sized one is not available. The film itself may be hardened by washing it with dilute solution of ox-gall; and in printing, the damping must be less frequent, with a lighter pressure. If ink shows a tendency to stick to the film on its edges and on the large or heavy portions of the picture, it must be treated as a stone. The work must be washed out with turpentine and rolled up in a stiffer ink for a while, returning eventually to the same ink as previously in use. It is possible to partially correct this fault between each impression, by cleaning the dirty edges of the film with a sponge and gum water or turpentine and rag.

However faulty the first lot of impressions may be, it is advisable not to give up attempting to secure better ones from the same film. Unless the film is actually damaged, or the picture is the result of over-exposure in the photographic printing, there is no reason why the picture should not give good results by careful manipulation. It is simply a matter of patience and the constant attention of the printer to all the faults which have been touched upon in the foregoing remarks.

FOR BROWNING BLUE PRINTS.—Dissolve a piece of caustic potash as big as a soup bean in five ounces of water. Place print in this solution, and it will fade to orange yellow. When all blue prints have disappeared wash the print thoroughly in clear water, then dissolve a partly heaped teaspoonful of tannic acid in eight ounces of water. Put the yellow prints in this bath, when they will turn to a brown. Then wash well and dry.—*Scientific American.*

IN "The Provincial Press in London," just published, 350 provincial newspapers are treated as having agencies, representation, or offices in London. The object of the book is to provide such useful information to the professional classes and to general advertisers as has not hitherto been obtainable from other sources, and overcoming the oft-experienced difficulty in securing provincial newspapers, etc.

Two Colours at One Impression in Lithography.



HERE is never a need apparent but an inventor is found to supply it. Especially has this been true in printing and the allied arts. No sooner has commercial usefulness opened the way for a machine of special construction with a particular end to subserve, than the mechanism has appeared and been successfully operated. When the

printing of daily newspapers in colours was pronounced a possibility, and an advance in line with the numerous evidences of progression in this enterprising and inventive age, it was not long before the *Inter-Ocean* press, printing copies of that paper in five colours at a speed deemed almost incredible, offered itself as the first American press to fill the place.

This recent achievement made by Mr. Walter Scott, of the firm of Walter Scott & Co., has now been supplemented by another, in the domain of lithographic printing, by which poster printing and the entire field of litho work can be simplified one-half, where colours are used in any number. The first press of this class has been built, and is in successful operation by the Gillen Lithograph Co., New York, and satisfactorily demonstrates its entire utility for doing work of a high standard. We have seen the press in operation, have seen the two colours applied on poster work, and found the results to be admirable as to register, and devoid of blurring or the confusion of colour natural to superimposing.

The machine is designed to print two colours at one operation. It is a stop-cylinder, built on the same general plan as the Scott ordinary lithographic machines and embodying the improvements therein, with the parts for driving the bed made much stronger.

Two stone beds and boxes are provided, with two sets of inking and water rollers with their fountains and distributing apparatus. The water rollers can be raised from the stones at will, and are raised and lowered automatically when the machine is working, to dampen one stone and not the other. The inking rollers can be raised at will, and are raised and lowered automatically when inking up, taking ink from the table each traverse of the bed; when the machine is working the rollers are raised one at a time out of contact with the stone inked by the opposite set of rollers. The ink distributing rollers are not set at an angle as usual, but are straight across the table and caused to vibrate at the proper time by cams; this arrangement takes up less space and ensures a better distribution. The sheets are fed to the feed cylinder while it is at rest, ensuring a perfect register. The sheet receives but one impression during the first revolution of the machine, the second revolution giving a second impression to the sheet and a first impression to the following sheet. The sheets are delivered in front with printed side up.

The presses are made with a capacity up to 37 x 52-in., that being the maximum size of stone accommodated; the length over all of such a machine is 19-ft. 6-in., and the speed averages from 900 to 1100 per hour.

The Gillen Lithographic Company, is a new firm with an exceptionally fine plant for poster printing, which is made a specialty. All departments from lithographic to wood and photo-engraving and electrotyping are centred under one roof.

Besides the mammoth presses already described, type presses are used, the invention of Mr. Scott, which print a two-sheet poster complete in different colours with one impression, an economy of labour which materially reduces the cost and ensures perfect matching when the work is posted. Mr. Gillen is an ingenious man, with a fund of original ideas that are applied in increasing the efficiency of his plant.—*Paper and Press* (Philadelphia, U.S.A.)

THE BIOGRAPH.—An interesting invention by an Italian nobleman, the Marquis Fonti, is described at great length in *La Nature*. It is called the biograph, and, as its name implies, is designed to produce a facsimile of writing at the same time that the original is made. This ingenious device is provided with two pens, which are supported by the framework in such a manner that their points are always in the same horizontal plane. The pen to the right is intended for the operator or writer, and the least stroke made by this pen is at the same time duplicated by the one on the left. The framework is so jointed and hinged that the pens can be moved in any direction. A counterbalance takes the weight of the frame from the hand, so that the act of writing is made almost as easy as with the usual pen and holder. Two ink wells are provided at the base of the stand, and the dipping of a pen in one well causes the pen to dip in the opposite well. When the two sheets of paper to be written on are placed parallel to each other and secured, the remainder of the work is as simple as ordinary writing.

Two curious examples of "dust" or "molecular" photographs have been noticed in London. The plate glass of a hotel window had near it on the inside a glass screen bearing the words "Coffee Room" in unfrosted letters. On removing the screen the words were found to be plainly visible on the window, and could not be removed by washing. In the other case a window was formerly protected by a gauze screen having the same words—"Coffee Room"—in gilt letters, and on misty days these words have appeared on the glass since the final removal of the screen.

IT is interesting to note so much of photographic interest in Alma Tadema's work, this talented artist having expressed himself somewhat strongly in reference to the aid given to the artist by the camera. He says in *The Studio* that the camera has had a most healthy and useful influence on art, and that photography is of the greatest use to painters. As an authority upon art and methods whereby success may be secured in the practice of it, Alma Tadema's opinion may be cited as one of the greatest weight.

The Photo-Mechanical Litho Processes.



R. W. T. WILKINSON, the well-known authority on "process" work, in the course of a paper read before the recent congress of photographers at Chicago, said that photo-litho transfers are coming into very general use all over the country, firms who a few years ago would not hear of such a thing are now using large numbers of them; but there is one drawback in the difficulty in obtaining good transfers, so few operators know, or will be told, how important it is to keep the ink spare instead of thick, especially in fine work.

The best method of inking up these transfers is to use a glue roller charged with transfer ink thinned with turpentine, a method first introduced by Mr. Wilkinson; and as it is simple, easy, and efficient, some operators prefer to use the old and clumsy methods of rubbing over the ink with a sponge, or else ink up a stone, place the exposed print upon it, and pull through the press; the sponge method yields heavy and uneven transfers, the inked stone gives rotten lines and dirty whites.

In chromo-lithography, photo transfers are much used when different sizes of one subject are required; then one drawing or set of stones only is prepared; then from each stone a black pull is taken; this is photographed, put on the stone, and printed.

PHOTO-LITHOGRAPHY IN HALF-TONE.

This process is not very extensively practised, but where it is very fine work is produced. The best work is done by transfer from a collographic plate, the necessary grain being obtained by using either ferrocyanide of potassium, or calcium chloride, or both.

COLLOTYPE.

This process has been very extensively taken up within the last three years, but there are only about four firms who turn out really good work, simply because the process is starved in the initial stage, viz., the negative. Money is lavished on machinery, &c., good wages are paid to the plate-makers and printers, but anyone is considered capable of making a dry-plate negative; now and again by a fluke a good colotype is turned out, but ninety per cent. are stale, flat, and unprofitable.

This process is essentially a photographer's process, and only those who are capable of constantly making good negatives can insure good colotype prints; given a good negative the process is simplicity itself, but not without.

PHOTOGRAVURE.

England was, a short time ago, very backward with this process, simply because of the difficulty of getting men capable of producing the prints from the intaglio plates; now, thanks to the pluck and enterprise of firms like Annan & Swan, London, English photogravure prints hold their own in comparison with any.

Some firms use the Talbot-Klic process, in which the grain is obtained by dusting with finely-powdered resin, the resist being a carbon negative, i.e., a pigmented gelatine print from a transparent positive, mounted upon the copper-plate and developed thereon.

Other firms use the method of dusting over a gelatine image with a resin in fine powder, and when the image is dry obtain the grain by dissolving out the resin, and then obtain an intaglio plate by electrolysis.

Others, again, prepare gelatine films with plumbago, &c., of varying degrees of coarseness, which, when exposed to light and developed, yield a granular-surfaced image, from which, by the electrotype process, a printing plate can be obtained in copper or steel.

Taken altogether, England has no cause to be ashamed of her photo-mechanical work, and it does not require any great stretch of imagination to say that in the future this satisfaction will be maintained.



ALUMINIUM, a metal formerly so costly, is being introduced into printing now it has become so cheap. It proves to be of high value for etching purposes, which is done by a liquid composed of 500 to 900 grammes of water, 100 grammes of chloroxygen acid, and 25 grammes of nitric acid, and when applied to plates it may be used for lithographic purposes, and serve for drawing and engraving. Its relatively small weight is one of its advantages; a plate of aluminium of 1.5 mm. thickness weighs $2\frac{1}{2}$ times less than one of zinc of the same size, and about sixty-six times less than a lithographic stone of the same size, but of the necessary thickness of 10 centimeters. Very thin sheets of aluminium have already been printed upon instead of paper.

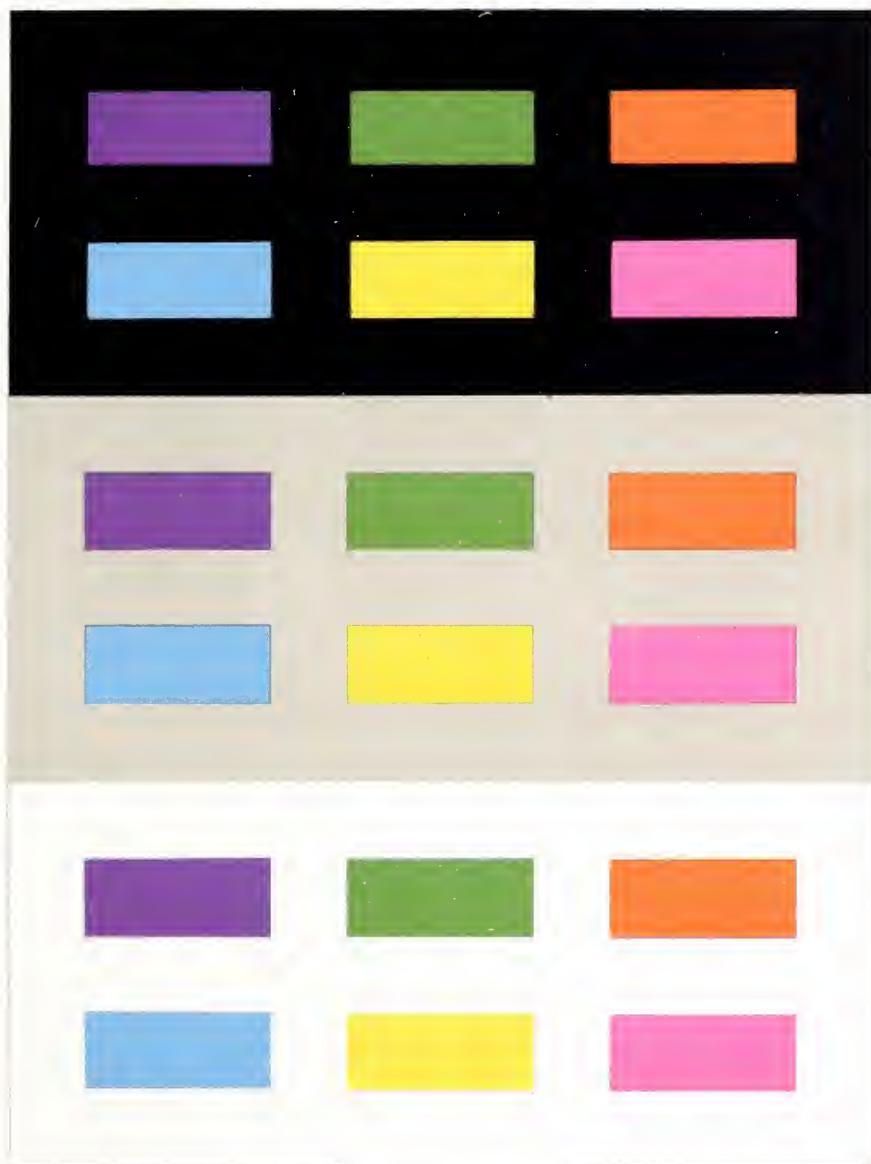
THOSE of our readers who are experimenting in photo-mechanical work may be warned in time by the fate that has befallen one of our readers, to work in gloves. The unfortunate one writes:—"I was experimenting with a new process, and, when everything seemed to be going right, I got some of the sensitised emulsion on both hands, and in twenty-four hours I was *hors de combat* from skin poisoning by ammonium bichromate. I have been living in gloves day and night for a fortnight, my hands and fingers being ulcerated all over, fortunately only on the backs." Our correspondent has our sympathy, and, doubtless, also that of our readers.

LITHOGRAPHERS and showbill printers held a meeting in the Grand Pacific Hotel, Chicago, recently, and formed an association for mutual protection, called The Show Printers' Association. Thomas S. Dando, of the Philadelphia *Ledger*, was elected president, and Moncrief Leland, also of the same city, was appointed temporary secretary. No work will now be done for any theatrical manager or showman who is indebted to members of the association unless paid in cash. Twenty-three firms were organised.

FAMOUS persons in the arts partake of the immortality of princes, and are upon a footing with them.—FRANCIS I.

COLOUR CHART N°3.

Printed on white w. M. L. & Co's Lithographic Organic Papers.
Works - Johnson, Scotland.



Printed on M. L. & Co's Coloured Lithographic Paper
Works - Colding Park - Edinburgh.

Color	Red	Green	Blue	Cyan	Magenta	Yellow	Black
Red	100%	0%	0%	0%	0%	0%	0%
Green	0%	100%	0%	0%	0%	0%	0%
Blue	0%	0%	100%	0%	0%	0%	0%
Cyan	0%	0%	0%	100%	0%	0%	0%
Magenta	0%	0%	0%	0%	100%	0%	0%
Yellow	0%	0%	0%	0%	0%	100%	0%
Black	0%	0%	0%	0%	0%	0%	100%

What is Colour?

CHAPTER X. . .

(Continued.)



CONTRAST OF COLOUR.



WHilst regarding the experiments of M. E. Chevreul as a safe standard, there are other investigators who claim a difference in results from this well-known writer. With the latter the most important difference arises from the preconception of the red-green-blue theory of primary colours. The differences are not so wide as to throw any doubt upon the effects in the main. Thus, in the pairs numbered 1 and 2, it is claimed that the inclination of the red is towards purple, and not violet; in pairs 3 and 5 the inclination of red is towards orange rather than yellow. The wider divergencies of opinion exist in pairs: 10, where yellow is said to incline to orange, and green to blue-green; 12, where green is said to incline towards yellow-green, and blue towards violet; 14, where green is said to incline towards yellow-green, and violet towards purple; and 11, in which yellow and blue, being almost complementary, are said to increase each other's brilliancy.

Whilst agreeing with the other writer in the red-green-blue theory, yet these experiments do not altogether meet that view. The latter pair, No. 11, entirely depends upon the character of the yellow. Yellow and blue are vague terms. If it be pure yellow and pure blue, then they are not complementary, and are more liable to give a simultaneous contrast than to increase brilliancy. One thing is certain, that the extensive table of simultaneous contrasts already given will stand verification by any artist working in colour, and there is little doubt that, as those results were obtained by actual experiments, they contain a very close alliance to truth. The other differences referred to in pairs 1, 2, 3, 5, 10, 12, and 14 are differences only of a degree, and may depend upon different writers' nomenclature of colouring; or it may be that one writer works the result out on a certain theory of primary colour sensation, and the other gives practical results and solves them as nearly as possible upon a similar theory.

In further pursuing the nature of the contrast in pair No. 11, it can be readily proved that if the standard yellow be placed beside an orange-yellow, the yellow will have a tendency to appear greenish, whilst the orange-yellow apparently becomes redder; and by placing the same standard yellow beside a greenish-yellow, the yellow will appear more orange, whilst the greenish-yellow becomes still greener. Thus the same standard yellow at one time appears greenish and at another time appears of an orange cast.

Similarly, if blue be placed beside a greenish-blue, the blue will appear (redder) of a violet caste, whilst the greenish-blue takes a yellower tone; and by placing the same blue beside a violet-blue, the blue appears greenish, and the violet-blue will have a redder cast; the same blue thus appearing in the one case redder, and in the other case of a greenish shade. The same applies to red, for if red be placed beside an orange-red, the red will appear (less red) of a purple shade, and the orange-red will take a yellower cast; and by placing the same red beside a purplish-red, the red will become apparently yellower, whilst the purplish red will appear of a bluish tone; the red thus presenting first a purplish and secondly a yellower or orange cast.

Bearing these facts in mind, it is always necessary to take a most careful note of the particular hue or shade of a colour before bringing it into contrast, and when brought into contrast it can be determined by rule that the colours will differ by the absorption of their constituents, which are common to both, as set forth in column III. of the Table of Simultaneous Contrasts given in chapter X. The determination of the common constituent is not a matter of much difficulty to those who are accustomed to prepare pigments for painting or printing; and those not so accustomed must rely upon the experiments in building colours from the solar spectrum or by the Maxwell discs, as already described in the early chapters. As examples, if orange be placed beside either scarlet-red, pure red, or crimson red, the orange appears yellower and the reds more purple. Again, if violet be placed beside a similar series of reds, it becomes bluer, whilst the reds become less purple.

From the close study of simultaneous contrast in chapter X., and the remarks just made, the subject has been brought down to a point where a great nicety of colour vision is necessary to discriminate the changes which take place, and to be able to correctly record them.

Passing on to another branch of the same subject, the contrasts of colours with the neutrals—white, black, and grey will be dealt with. The contrast with white is so common that it will readily be appreciated.

The contrast set up in viewing a coloured body beside white is very low in degree, and without a previous knowledge of the laws of contrast it could easily pass unnoticed. But these contrasts do occur, and it is the object of the special illustration to show not only the separate contrasts of the primary pigmentary colours and the secondary combinations with black, grey, and white, but by juxtaposition to show the comparative effects of contrast with black, grey, and white.

In order that the illustration may be properly viewed, the experimenter must use three thin cards (about $5\frac{1}{4} \times 2\frac{3}{4}$ inches), and cut in them an oblong space barely $1\frac{3}{4} \times 1\frac{1}{8}$ inches. With these three cards one colour only in each section can be brought under view, and a fair computation made as to its actual contrast or colour sensation.

Taking the colours in the illustration, the YELLOW upon white appears much darker than it does upon grey or black. The latter contrast gives the yellow

great brilliance, whilst the grey surrounding gives greater brilliance to yellow than the white, and less than the black backgrounds. The reasons for such apparent differences are not difficult to find, and in the case of all contrasts with white, as compared with similar contrasts with black, it can be at once stated as caused by a physical difference in light. The amount of light from the white background has a superlative effect upon the retina, and so strongly excites a large surface of it that the adjacent colour is less apparent, for it falls so much short of white in brilliancy or power to reflect light, and consequently is less exciting upon the retina. When, however, the eye is relieved from the white surface, and is allowed to rest upon a coloured patch isolated by darkness (black), the whole excitement, save some four per cent. of white light from the black, is due to the coloured patch itself, which, constituting the sole source of excitement, renders itself the more conspicuous or brighter. According to the theory of complementary colours, however, it is also apparent that when gazing upon the yellow patch, there is the possibility of the white becoming tinged all over with a purplish-blue shade, and this in turn gives a greater brilliancy to the yellow. Applying the same reasoning to the black background, it can be imagined that of the four per cent. of white light reflected from its surface, the main part of it suffers a change into the complementary of yellow, thus increasing the brilliancy of the yellow, and at the same time giving a bluish cast to the black.

With the grey background this theory of complementary colour sensation plays a considerable part in the ultimate effect. In the yellow upon grey, the purplish cast appears to pervade the grey, and thus assists by complementary contrast to lighten the yellow; but as the amount of white reflected from the grey is so much less than from a white surface, the excitement of a complementary colour upon grey is similarly so much less in intensity than upon white, and the effect of its contrast so much less than white, leaving the yellow patch the more conspicuous from its surrounding being only a semi-darkness or grey. But the composition of grey has also a bearing upon the ultimate contrast. If the grey be formed by compounding black and white pigments, then the effect of the grey may be considered as nil. But if, as in the present illustration, the grey is compounded from black, yellow, red, and blue, then the constituents are liable to assert themselves in contrast and heighten the ultimate effect. A grey thus compounded consists of a mechanical mixture of small particles of the constituents lying very closely together, and if a strong colour be brought into juxtaposition, then the colour which is similar to it in the grey is nullified, leaving the remaining colours of the grey to assert themselves as the grey alone. Such an effect is only to be expected by the laws of simultaneous contrast, and should be judged from that standpoint.

The next patch of colour to be dealt with is the RED, which in the illustration is compounded from vermillion and crimson. What has already been written respecting the contrast with black and white, both physically and according to the complementary theory, is equally apparent with the red. The difference arises

only from the difference in luminosity between the yellow and red; whilst the changing degrees of brilliancy from the white to the black are apparent in the red as in the yellow. The contrast with the grey is, however, not so perceptible as in the case of yellow and grey, no doubt due to the relative luminosity of grey and red being nearer than yellow and grey.

The red in each case tends to excite a sensation of green upon the background. This green in the case of black has very little effect; in the case of the grey it tends to strengthen the combination of yellow and blue in the mixture, and gives the grey a distinct greenish caste; in the case of white the effect is very small, owing, as in the other cases, to the lack of power in the red. If the red had been a scarlet or vermillion, the saturation of the red would be more apparent, and the excitement of a complementary would be more striking.

The BLUE, which is compounded from Chinese and Prussian blues, is acted upon similarly to yellow and red with respect to brilliancy when contrasted with white, grey, and black; the black making it by far the brightest. But the blue has an effect upon the grey in the illustration somewhat different from what might be expected. The blue seems to nullify the blue in the grey, leaving the red and yellow with the black to form a dark orange combination. Such an aspect may be the result of the excitement of the complementary of blue, the greenish-yellow, which upon the grey becomes very dark and combines to give the greater depth to the grey than is apparent around the red patch.

The contrasts of the ORANGE, GREEN, and PURPLE with white, grey, and black are, so far as brilliancy is concerned, similar to the foregoing; the white in each case darkening the colour, whilst the black gives brilliancy; the grey holding intermediate position.

The orange upon the grey is affected by the excitement of its complementary blue, which tends to darken the grey slightly by increasing the power of the combination of black and blue.

The green upon the grey has a tendency to redder and deepen the grey by the excitement of the complementary red, which increases the power of the red, blue, and black in the grey.

The purple upon the grey has a marked effect. The purple is strong in the illustration, and the excitement of an orange complementary upon the grey is the more apparent. The orange thus excited tends to allow a stronger assertion of the power of black and blue in the grey, and thus increases its depth.

[To be continued.]



THE characteristic of Turner was not that he painted roughly, but that he painted light and colour. The characteristic of Cox was not that he blotted in his forms, but that the forms he blotted in represent nature. Nature alone, and awake, and with a temper. It is the glory of the painter to be a poet; it is the glory of the poet to be a painter. But the difficulty of the painter is to tell us what he thinks; the difficulty of the poet is to tell us what he sees.—WYKE BAYLISS.

Specimens.

[Will our friends kindly remember to send their specimens either TIGHTLY ROLLED OR FLAT BETWEEN BOARDS; the cost is but a trifle more, and for review they gain in being presented as they come from the machine. If sent unprotected, specimens are usually so crushed and disfigured as to be utterly unfit for criticism or preservation.]



AN artistic souvenir of the visit of the Associated Chambers of Commerce of the United Kingdom to Plymouth is furnished by the handsome invitation card of the Mayor's reception at the Guildhall on Tuesday, the 26th September. This card, which has been designed and executed by Mr. John Smith, printer and lithographer, of Plymouth, is decidedly a work of art. Its general idea and style is

a new departure from the usual run of invitation cards. The design is unique and appropriate, as well as national in character. The borough arms, with those of the mayor, are richly emblazoned, the border being composed of the rose, shamrock, and thistle intertwined, and in the four corners are the arms of England, Scotland, Ireland and Wales, representing the United Kingdom; while on either side of the mayor's are those of Devonshire and Cornwall. On either side are pretty vignettes of the Guildhall buildings and Plymouth Sound respectively. The wording is in the centre of the card, in gold and blue, interlaced with scroll work. Altogether, the card, in design, colour effect, and rich finish of execution, does great credit to the printer and lithographer, and is sure to be treasured by those fortunate enough to secure copies.

WE have frequently seen it stated that no good lithography is done in Italy, but this assertion is certainly not borne out by an inspection of the varied collection sent us by the well-known firm of Messrs. G. Ricordi, of Milan. The foundation of the parcel consists of pictorial posters of all sizes, then comes a series of music titles, a few diplomas, and, lastly, a collection of menu cards. The latter contain the finest work and are richest in colour and design; the music titles follow the French in freedom of design and dainty colouring, and the pictorial posters are remarkably fresh and bright in grouping, colour, and generally artistic treatment. The mechanical execution is equal in every respect to similar work done anywhere on the Continent, the register being in every instance remarkably good.

A CIRCULAR from Messrs. M. L. Jonas & Co., 21 Australian-avenue, E.C. (in which is enclosed a very attractive chromo-lithographed business card) announces that the firm will in future be "M. L. Jonas, Wolf & Co., Ltd.," Mr. Jonas becoming permanent managing director, Mr. A. W. Savill assistant manager, and the shares being all taken up by the staff.

THE invitation card issued for the reception by the Corporation to the Institute of Journalists at Guildhall, on the 22nd ult., is a handsome and decidedly artistic piece of work, in general character an entire departure, both in design and colour, from previous souvenirs. The design is allegorical, representing the power and widespread influence of the press:—the background of a dark chocolate colour, the lower part hidden by a scroll bearing the invitation and the recipient's name. From behind the scroll issues the Tree of Knowledge, its spreading branches and leaves covering the upper portion of the card; entwined around the trunk is a serpent, typifying Wisdom, another attribute of the Fourth Estate; on the lower limb is an antique lamp, indicating Light, and suspended from it is the seal of the institute. At the top of the card are the arms of the corporation, and also of the Lord Mayor, and from a lower limb are pendant the shields of coats of arms of the sheriffs, Alderman Sir Joseph Renals and Alderman Sir Walter Wilkin; the arms of the chairman, Mr. A. Brookman, c.c., appear on the right hand corner of the scroll. To the left of the tree is an allegorical figure of Fame, from whose upraised trumpet falls a riband, inscribed, "Their sound is gone forth into all lands." Seated near her is the bird of Minerva—the emblem of Wisdom. The card was designed and printed by Messrs. Blades, East and Blades, of 23 Abchurch-lane, E.C., and adds another to the long list of splendid mementos in connection with the City and Corporation that have emanated from their establishment.

THE Tokyo Tsukiji Typefoundry at Tokyo, Japan, not only make type, but run an extensive letterpress and lithographic printing works, from which many admirable productions are constantly being turned out by native workmen. A couple of chromo-lithographic calendars just to hand are decidedly Japenesque in character—one representing an open fan with chrysanthemum and other bright blossoms spread about in artistic confusion, a pretty vignette in the top left-hand corner, and the calendar and other information (in Japanese characters) in panels in the lower part of the design. The second design is made up of representations of Japanese musical instruments, quaint masks, &c., and has the calendar in both Japanese and English. Both artistically and mechanically, the workmanship is of a character that could scarcely be surpassed in Europe.

AN envelope full of proofs of recent engraved work from Messrs. Royle & Son, Newgate-street, E.C., contains some very artistic and fresh and original ideas for business cards, invoice headings, &c., both lettering and ornamentation being exceptionally good, and the engraving in the highest style of finish. Messrs. Royle & Son cultivate American ideas in design and lettering with a success fully equal to their confrères across the pond.

A NEATLY lithographed circular (facsimile transfer from typewriting) from Mr. Wm. Macrae announces that he has acquired the business lately carried on by Messrs. J. Seaton & Co., Glasgow, and will continue it under the old firm name.

A COLLECTION of fine specimens of chromo and commercial lithography from Messrs. Hussey and Gillingham, Waymouth-street, Adelaide, are evidence of the rapid improvements made in late years by our confrères on the other side of the globe. The collection comprises showbills and cards, club and business cards, fruit labels, book illustrations, and some posters, effective designs with artistic grouping and treatment, attractive lettering, and bright harmonious colouring, excellent workmanship being noticeable throughout. One of the best jobs is a "Manual for the Garden and Farm," for Messrs. E. & W. Hackett. It is profusely illustrated, and quite handsomely got up as to cover and general style. The cover is pale blue, with a broad gold edge, and the emblematic illustration is an artistically conceived flower stand composed of two dolphins in bronze, supporting on their entwined tails a nautilus shell filled with native blooms, grasses, etc., admirably drawn, and consisting of the flannel flower (*Actinotus helianthus*), our own beautiful wattle (*Acacia pycnantha*), specimens of the acacia longifolia, the spider orchid, the quaint, high-toned Sturt pea, the delicate maiden-hair fern, and the lovely heaths, the whole having a remarkably pretty effect. We note that Mr. H. Barrett, who has been for ten years litho artist and manager of the litho department of the Government Printing Office, has joined the firm.

MR. THOMAS BROAD, JUN., the enterprising trade printer, of St. Bride-street, E.C., sends us a copy of a new business card got up to simulate a postcard, but in better style. His own portrait takes the place of the Queen's head, and the circle round the official post office stamp is made to read "Lithography up to date," with the date "July, 1893," in the centre. Everyone knows that Mr. Broad is an up-to-date lithographer, who knows what he is about, and when he writes, "I am delighted with the second volume of B.L., and enclose cash," he does but echo the opinion of a whole host of equally delighted subscribers.

AN excellent specimen of commercial lithography is the four-page 8vo. circular from Mr. W. N. Sharpe, of Bradford, announcing the removal of his works to new premises, at Eastbrook-lane. The announcement is in very neat script writing on the front page, a view of the new works occupies the third page, and a clue map shewing the street position of both the old and new premises occupies the fourth page, Mr. Sharpe's own engraved business card, a very effective design and admirably engraved, filling the second page. The printing, which is in black throughout on duplex tinted paper, is excellent.

"MACHINE-PRINTED" sheets of chromo designs for florists' catalogues have been sent us by Mr. John Honeyman, from the well-known firm of Messrs. Blake and Mackenzie, of Liverpool. The designs comprise admirably-arranged groups of daffodils, hyacinths, tulips, &c., lifelike in colour and general treatment, and well up to the best standard of the day in mechanical execution. Better work could not be desired than is produced by this enterprising firm.

Iron Show "Cards."



OWEVER fickle public taste may be in the matter, and however strong the desire for change or for "something new" with advertisers in the past, there is a marked alteration coming over the leading firms in their adoption of permanent iron show sheets in place of hitherto lithographed cards, for railway stations and other exposed places. Willing and Co.'s blue and white enamels have been common enough for years: but the fashion still gains ground. The large firms of enamellers in Wolverhampton, Bilston, Aston, Bourneville, etc., and the D. P. Co. seem to be having a good run of business in producing chromo iron show sheets. Amongst these can be noticed the highly attractive sheet of Burgoyne's Australian Wines, in five printings (including bronze) upon a general flat tint. The sheet is $19\frac{1}{2} \times 26\frac{1}{2}$ -in., and is worked out with four of the well-known bottles, labelled "Tintara," "Oomoo," "Harvest Burgundy," and "Kangaroo Burgundy." Look at it as we will, it is impossible to say that it is not a success; in fact, when once seen it cannot fail to be remembered. Then, again, there is the long sheet advertising Holbrook's Sauce and Collier's Cocoa, some 4-ft. 6-in. long by 18-in. wide, which is very conspicuous. Hudson's Dry Soap lantern advertisements are some years old; but Bryant & May's new sheets, some 30×40 -in., in three printings, are now being erected, along with new sheets advertising "Bovril." Stephens' Inks are advertised on iron, and newspapers themselves seek the same permanent publicity. Pears' Soap and Sunlight Soap advertisements have been transferred to the same material. The list, in fact, seems interminable, and is certainly increasing. If this diversion is not taking work out of the lithographic business, then we shall not have anything to grumble at. But if it is not at present appreciable, the time must come when it will be. It cannot be present economy which dictates iron enamels, for they must be far more expensive in their initial production than lithographs. The economy must be in the determination of firms to rely in the future upon a few well-chosen permanent enamels which shall become, by constant inspection, as familiar as household words.

If this be the intention, then it is time to recognise the fact in lithographic establishments, by ceasing for a while to increase the staff with numerous apprentices, who, when out of their time, will find that they have gone into a business which has no prospects of a livelihood for them. Whether iron enamels become the fashion or not, the timely restriction of apprentices cannot fail to have a beneficial effect on the business as a whole. The public are not so well able to express an opinion on this point directly, but, by their preference for German Christmas cards, shew their opinion that English skill is not trained into the same channels as it is on the Continent. Why this is so can only be answered by the fact that by taking so many apprentices, the young men of taste and artistic ability seek other spheres to rise in, because the prospects of the lithographic business have been so deplorably reduced.

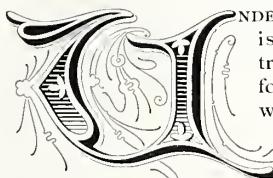




BY CHARLES HARRAP.

CHAPTER XI.

RE-TRANSFER INKS.



NDER the term Re-transfer Ink is included the ordinary transfer ink used by printers for the purpose of rolling up work on stone, and taking therefrom impressions upon transfer paper, to be subsequently again

transferred to a stone. The question of making transfers of such a nature as to keep any length of time is not here intended to be dealt with; only the ordinary transfer inks. In preparing such inks, it should be noted that whatever greasy matter be used, such matter must be ground into a medium, and the greasy matter should not exceed one-half of the mixture; better to let it be from one-third downwards of the whole mass. Thus a very serviceable re-transfer ink can be prepared by compounding:—

R.T. Recipe I.—

Lithographic writing ink	2-oz.
" printing "	2-oz.
Middle varnish	2-oz.

In this recipe the lithographic writing ink is melted, and when hot the other two ingredients, previously well mixed, are added and stirred in. If, when cool, this ink sets too hard for immediate use, it should be tempered down to a working consistency with ordinary printing ink. For letterpress transfers it will require thinning still further with either a little soft soap or turpentine, soft soap being preferable.

The foregoing recipe is not by any means the only one which can be used, but where practicable it is better to use it than any other. If, however, circumstances arise which require the immediate preparation of re-transfer ink and the lithographic writing ink is not available, then some of the following expedients may be tried.

Expedient recipes for re-transfer inks:—

R.T. Recipe II.—

Dry soap	1-oz.
Plate re-transfer ink	1-oz.
Printer's ink	2-oz.
Middle varnish	2-oz.

These materials must be ground well together with muller and knife on the slab. Heat need not be applied.

R.T. Recipe III.—

Dry soap	1-oz.
Tallow	1-oz.
Printer's ink	3-oz.
Middle varnish	2-oz.

The tallow may be reduced by heat, or ground into the other ingredients cold. In any case a little heat assists very materially in the thoroughness of a mixture of these semi-solids.

R.T. Recipe IV.—

Dry soap	1-oz.
Palm oil	1-oz.
Printers' ink	3-oz.
Thick or strong varnish	2-oz.

In this case the palm oil must be well ground into the compound, or it will spread in working.

R.T. Recipe V.—

Mutton suet	1-oz.
Printer's ink	3-oz.
Turpentine	q.s.

The suet, after well breaking, should be ground into the ink, and the mixture gently warmed to secure the melting of the suet. In use it may be thinned with turpentine.

R.T. Recipe VI.—

Stearin	3-oz.
" Plate ink"	3-oz.
Palm oil	2-oz.
Printer's ink	8-oz.

When ground together a gentle heat will assist the admixture of the stearin and palm oil. This ink is powerful, and will require to be used carefully, owing to its very greasy nature.

The foregoing recipes have all been tried, and found equal to the work required. The object in giving them is to show that there is no one set method for preparing a re-transfer ink. Every printer can find some other way of attaining the object, and these recipes will lead to the more ready elucidation of what a re-transfer ink should contain.

TRANSFER INKS FOR "COPPERPLATE"
OR "STEELPLATE."

The making of a really good plate transfer ink has been a source of considerable trouble in the business, and at the present time it is doubtful if it has been satisfactorily solved. So much secrecy has prevailed in the past that it is difficult to know whether any particular recipe has fulfilled its requirements. Printers have made their own plate ink, each having some special recipe, and in each case avoiding to divulge the component quantities or parts. This has led to confusion in the business, and very few are prepared to accept any other man's recipe against their own. Within recent years the lithographic material suppliers have gone into the making of plate inks, but so far as can be gleaned the same old prejudice has prevailed, and these manufactured plate inks have been put down by individuals all over the country as not by any means as good as their own tried recipes. It requires but the very slightest exercise of common sense to show that "manufactured" plate inks must become the standard article, just as the present lithographic writing ink has done. It is one of the ways in which to cheapen the modes of production, and thereby increase the business.

Reverting to actual recipes for making the plate transfer inks, the following are taken from old authorities, and are not given in any way as the best, but simply as good recipes which have been tried and found satisfactory :—

P.T. Recipe VII.—

Tallow	4-oz.
Wax	4-oz.
Soap	4-oz.
Shellac	4-oz.
Pitch	4-oz.
Litho printing ink	4-oz.

P.T. Recipe VIII.—

Tallow	1½-oz.
Wax	4-oz.
Soap	3-oz.
Shellac	5-oz.
Pitch	5-oz.
Varnish	2-oz.
Lampblack	2½-oz.

P.T. Recipe IX.—

Tallow	10-oz.
Wax	16-oz.
Soap	8-oz.
Shellac	14-oz.
Pitch	7-oz.
Varnish	8-oz.
Lampblack	2-oz.

P.T. Recipe X.—

Tallow	8-oz.
Wax	8-oz.
Soap	4-oz.
Shellac	4-oz.
Venice turpentine	8-oz.
Burgundy pitch	8-oz.
Lampblack	1-oz.

These recipes are in the main similar to those given for lithographic writing inks, the differences being that ingredients are added which render the inks readily fusible, and when cool again they resume their necessary hardness. In manufacture the method is the same. In each case the tallow, wax, soap, and varnish are mixed, melted, and burned just as for the "writing ink," and the other materials are added by degrees in a similar way. If it should be found that the ink is too soft, it must be heated until heavy fumes pass off, thus giving it a greater consistency.

A somewhat different recipe for plate transfer ink is the following :—

P.T. Recipe XI.—

Mutton suet	1-oz.
Litho writing ink	2-oz.
Beeswax	1-oz.
Castile soap	1-oz.
Gum mastic	1-oz.
Asphaltum	1-oz.
Pitch	1-oz.

An inspection of the constituents shows that the suet, wax, and soap must be melted together as already described in chapter IV. for litho writing ink, the mastic, asphaltum, and pitch being added by degrees to the molten and burnt mass. When the whole has boiled down by emission of fumes to a proper consistency, the litho writing ink, previously melted, should be added, thus avoiding a second burning of the litho writing ink.

LITHOGRAPHIC CRAYONS OR CHALKS.

The use of chalks cannot be said to be on the increase, for the methods which have been adopted in recent years, of obtaining graduated effects by

more mechanical means, have greatly superseded chalking. Not long ago chalking was the principal means of producing half-tone or shaded drawings, and beyond doubt the fine chalk drawings of that period are unsurpassed in natural treatment by anything more recently produced by stipple, splash, or medium. Such a distinction applies equally to chromo-lithography as to works in monotone, and can be verified by inspection of the works of well-known old-established firms. The difficulty in chalk work is not so much with the artist as with the printer. The work consists of the finest particles mounted upon a number of pinnacles, ever ready to be destroyed by a mere abrasion; whilst the stippling is upon a flat stone, consists of a definite amount of solid ink, and is far less liable to injury. From a commercial point of view, it pays better to use stippling, medium, ruling, or splash than to have works executed in chalk; especially if the result can be obtained by a judicious use of all the four methods mentioned on the one work. Nevertheless, chalking must still be resorted to for a large amount of lithographic work, and a brief description of the chalks used forms a fitting conclusion to the foregoing details upon transfer inks.

The ingredients of the chalks are much the same as for lithographic writing ink. Some makers believe in variety and use the following materials, viz.: soap, wax, shellac, spermaceti, gum copal, gum mastic, tallow, and sub-carbonate of potassium. One of the simplest recipes is :—

L.C. Recipe XII.—

Wax	4-oz.
Dry soap	4-oz.

And another almost as simple is :—

L.C. Recipe XIII.—

Tallow	4-oz.
Wax	4-oz.
Soap	4-oz.
Shellac	4-oz.
Lampblack	q.s.

In this, the ingredients and proportions are the same as for litho writing ink. The chalks are prepared in the same way as litho writing ink, only they must be "boiled" longer to increase their hardness. The same materials may also be used as follows :—

L.C. Recipe XIV.—

Tallow	2-oz.
Wax	2½-oz.
Brown soap	1½-oz.
Shellac	1-oz.
Lampblack	4-oz.

Wherever shellac is used in these recipes, it should be the "ruby" or "button" shellac.

The following tabulation of recipes is taken from Seneffelder's work :—

L.C. Recipes.. xv. xvi. xvii. xviii. xix. xx. xxI.

Black .. 2 .. 2 .. 2 .. 2 .. 3 .. 3 .. 3 .. 3	
Soap .. 6 .. 4 .. 4 .. 4 .. 5 .. 5 .. 5 .. 6	
Wax .. 4 .. 8 .. 4 .. 8 .. 8 .. 8 .. 8 .. 8	
Spermaceti — .. — .. 4 .. 4 .. — .. — .. —	
Shellac .. — .. — .. — .. — .. 4 .. 4 .. —	
Tallow .. — .. — .. — .. — .. — .. — .. 2 .. 4	

In reviewing these recipes, it should be noted that in Nos. XVII., XVIII., and XIX. spermaceti or shellac is used without even a small amount of tallow, which experience has proved is not the best plan. Again, in

all Seneffeler's recipes, XV.-XXI., wax is a prominent ingredient. It is often said that the proportion of soap in chalks is high. The recipes under consideration shew:—

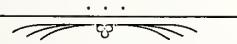
In No. XII. the proportion as one-half.
" XIII. " " one-quarter.
" XIV. " " one-fifth.
" XV. " " one-half.
" XVI. " " two-sevenths.
" XVII. " " two-sevenths.
" XVIII. " " two-ninths.
" XIX. " " one-quarter.
" XX. " " five twenty-seconds.
" XXI. " " three-sevenths.

Demonstrating that in five cases the proportion exceeds one-quarter and in five cases it is one-quarter and less. Comparing this with the recipes given in chapter IV. for lithographic writing inks, the proportion of soap in one case is nearly one-half, and in the remaining nine cases from one-quarter downwards. Thus, after removing the three recipes in which the proportion of soap is one-half, the remaining ones shew but a very slight increase in the proportion of soap in chalks over lithographic writing inks.

In compounding these recipes, the same mode of manufacture is employed as for lithographic writing ink, except that the shellac should be added last, and well stirred in to prevent the whole mass becoming carbonised. The hardness of chalks can be varied by longer burning, and by varying the proportions of shellac, spermaceti, or gum copal; the chalk bearing the name of copal being the hardest, and probably deriving its hardness from the presence of either gum copal or an extra quantity of shellac.

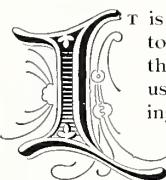
In using chalks, there are difficulties which can only be overcome by paying for better workmanship and not constantly trying to reduce cost of production at the expense of others. The commoner chalks now in the market cannot be relied upon. Over and over again in sharpening them it is found that they contain air-bubbles, and as a consequence fall to pieces in waste. The parings from chalk should always be saved for rubbing in tints, for the mezzotint methods of chalk drawing, or for use in transfer inks. They are so strong in grease as to be exceptionally well suited for such purposes.

[To be continued.]



EVERY subscriber to this paper who fails to read the advertisements it contains does not do himself justice, for a knowledge of what enterprising manufacturers are offering, as made known through their advertisements, cannot fail to be of decided advantage. Wide-awake manufacturers do not advertise for the purpose of informing the trade that they are in business, for that is a known fact, but to remind them of articles which they need and which it pays them to buy when they see them mentioned. We once heard a man brag that he "never read advertisements," and after talking with him awhile, it was pretty evident that he never read advertisements or anything else. The advertisements are a very interesting part of a live paper. They are the dealers' editorials to the trade.

Trade Notes.



It is a fact that does not redound much to the credit of British manufacturers that most of the machinery hitherto used in this country for collotype printing has been of foreign construction.

First the French and then the Germans secured a good hold of the English market before our own engineers gave the matter any attention. Messrs. Ratcliff & Son claim to have led the way, and have had two machines at work at Leeds for several years past, which we are informed give great satisfaction. Now Messrs. Furnival & Co., always enterprising, follow suit with a collotype machine embodying some novel features, and of a solidity, simplicity, and strength of construction that holds its own with its foreign rivals. The first machine has now been for some months in daily operation at the works of one of the most prominent firms in the trade—Messrs. Marcus Ward & Co., and is understood to be giving the utmost satisfaction.

Our representative recently paid a visit to Messrs. Furnival and Co.'s works to inspect the new machine, and, from what he saw and heard, is convinced that British collotype printers can now rely on getting a thoroughly reliable machine, capable of doing the finest collotype printing, without going abroad for it.

Between a collotype and a lithographic machine there is not, to the casual observer, much difference, but the practised printer knows that there are many minor details in the construction and method of operation of the first-named machine. Among these, one of the most important is the fact that the printing is done from glass plates, and the pressure required for a litho stone would be fatal to the life of the delicate gelatine film; then the necessity for a mask to preserve the edges of the print calls for special treatment, and in the inking and other details there is an appreciable difference. In the new machine these details have been carefully worked out. Although, as we have said, the machine in appearance is at the first glance similar to a modern litho, on closer inspection a difference is at once seen on examining the details.

The framing is strong and well put together, the carriage, running upon friction pulleys, carries the bed, with inking table at either end. There is a movable iron surface fixed on the bed in similar manner to a litho stone; the upper surface of the bed has a series of diagonal slots cut in it, dovetailed, and fitted with movable steel catches, that can be made to secure any sized glass plate, at any part of the bed. There is an arrangement for the bed to be heated by gas supplied by means of india-rubber tubing, which will recommend itself to collotype printers who know the difficulties of keeping the printing film in good working order in cold weather.

The inking arrangements are designed to meet the difficulties and peculiar treatment required for collotype printing, and consist of, in front of the cylinder, four leather inking rollers, three leather distributors,

three polished steel riders, and at the back of the cylinder, six composition rollers, with three composition distributors, and five polished steel riders. All the roller brackets are brass, the rollers fitting without any vibration whatever. The forks for the distributors can, if required, be arranged for diagonal inking. An ingenious method of lifting the rollers clear of the work has been devised—a half turn of a handle actuated by a mere touch of the finger.

The roller inclines are of wrought iron covered with leather. As it is often necessary to give double inking, means have been devised of changing from single to either double or treble inking, the lever for this purpose being close to the hand of the feeder, and not at the end, as in many Continental machines. All motions are actuated away from the geared end of the machine, as being not only handier, but obviating risk of injury by having to go round the gearing.

The cylinder can be stopped at any part of the revolution, and has a brake which is always slightly "on," so that if stopped midway it is prevented from going back and spoiling the work. A plate close to the feeder's foot enables him to regulate the pressure, which, being by carriage springs, allows much greater latitude than if spiral springs, which put on full power at once, were used. The grippers are flat and of steel, somewhat similar to those on most German machines. The mask or shield, a prominent feature of the collotype machine, opens and closes automatically, and is kept closely in place during the revolution. To clear this shield the feed-table has to rise: this is effected automatically, rising and falling to each revolution of the cylinder. The action is as follows:—The mask and grippers being open, the table is in position for feeding; the sheet is fed into the grippers, which then close; when the gripper lays hold of the sheet, the table rises, and the mask closes; the cylinder revolves, the table remains up until it comes "home," and the mask is lifted clear of the table, which is again lowered, and the grippers open. The mask can also be arranged so as to be operated by hand, and the machine can be fitted with automatic arrangement for feeding, as well as with pointing apparatus if required.

The machine has been specially designed and built from entirely new patterns, and every detail calculated to ensure perfect working has been embodied in it.

It is evident that Messrs. Furnival & Co., before commencing to build their new machine, have made a thorough study of all the collotype machines previously in use, and with their extended practical experience have seen the weak points and complicated arrangements present in many of them, thus enabling them to simplify the working parts, minimise the danger of accidents to the plates or to the operator, and at the same time produce a machine that shall be equal in every respect in ease and facility of working, and fine quality of the work turned out, to any other machine on the market. To have achieved this successfully—and reports of those using the machine confirm it—is something to be proud of, and their efforts deserve to be, and no doubt will be, rewarded by the hearty support of the craft who contemplate taking up "the picture printing of the future."

ELSEWHERE in this issue we give an admirably collotyped "study from life," printed for the B.L. by the well-known firm of Messrs. Robert Gardner & Co., Glasgow, who have a business announcement on another page. Messrs. Gardner have as a result of some years' constant study and experience in photo-mechanical process printing, made important improvements in their methods of working by which greater speed is secured in the actual printing, and work of a superior character in tone and clearness and beauty of treatment is secured. Their works are fitted with electric light and the latest and most improved machinery, and are under the personal superintendence of Mr. James S. Gardner, who is a practical collotypist, thoroughly conversant with every phase and detail of "the process of the future." The firm was awarded the highest place at the Leeds International Exhibition of 1891-2, and have steadily made their way to a front position in the ranks of photo-mechanical process printers. Arrangements have been made for another collotype supplement, subject for which is under consideration, and this will be accompanied by notices of the heads of the firm and a description of the works.

FROM Messrs. Barringer, Wallis & Manners we have received some capital specimens of their work in the shape of metal and mounting for cards and wall sheets. Made both flat and curved the metal holds tightly and is neatly and correctly affixed. The ingenious loop is a good feature of this work. All printers publishing calendars, wall sheets or cards of any description requiring metal binding, should obtain prices and particulars from this firm.

THE death of Mr. Mark W. Lambert, for many years head of the old established firm of printers and engravers in Newcastle-on-Tyne, carries the memory back for nearly half a century. The then head of the firm was a contemporary of Bewick, the reviver of wood engraving. Mr. Lambert was a copperplate engraver, as his father was before him, and for three generations they were connected with the printing, engraving, and publishing trades. During the busy period of the great railway development, they executed some of the heaviest work of the time in maps, plans, and other printing for railway bills then before Parliament, and were among the first to apply steam power to their lithographic presses. Christmas cards, Christmas almanacks, and war maps (first during the Crimean War), were amongst the early achievements of the firm, and they were also publishers of school books, Tinwell's Arithmetic being one of the best known. The coal trade, following on the railway development, grew into a large business, and Mr. Lambert entering it, the printing business was left largely in the hands of the managers. One of the managers about thirty-five years ago was Mr. Samuel Bremner, who put new life into the concern, and brought the letterpress department up to date, it having been neglected for the engraving and lithographic work. Mr. Lambert was for some years proprietor of the *Newcastle Chronicle*, now owned by Mr. Joseph Cowen.

Printed with Mander Brothers Inks

MANDER BROTHERS,

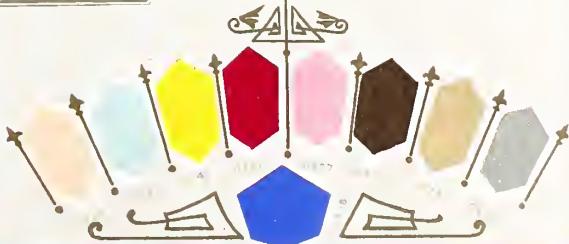
Printing Ink Makers,
WOLVERHAMPTON.

THE FOLLOWING LITHO INKS HAVE BEEN USED
IN THIS ILLUSTRATION.

- | | |
|------|-------------------------|
| 0936 | FRENCH GREY TINT. |
| 0933 | FLESH TINT. |
| 0922 | STEEL GREY TINT. |
| 0740 | CANARY CHROME. |
| 0581 | MADDER CARMINE. |
| 0927 | PINK TINT. |
| 0772 | CHOCOLATE. |
| 0779 | CHAMOIS. |
| 0708 | REGINA BLUE. |
| 0925 | GREY GREEN TINT. |
| 0676 | EMERALD GREEN (REDUCED) |

For prices see MANDER BROTHERS' list
in which every Ink has a fixed price.

LONDON, 17, GRACECHURCH ST. E.C.



Trade Reports.

(From our Special Correspondents.)

LEICESTER.

ON Saturday afternoon, August 26th, the artists and printers of the De Montfort Press litho department and a few friends spent a very pleasant afternoon at Longcliffe, in the Charnwood Forest, near Leicester. The occasion was to them one of great moment, being the first anniversary of the starting of the department, and everyone seemed bent on thoroughly enjoying themselves. A start was made from the works soon after two o'clock, and after a very pleasant drive through the charming undulating country, Longcliffe was reached shortly after four o'clock.

ample justice was done to an excellent tea; after which, Mr. Richards, foreman printer, proposed "Success to the Business," to which Mr. Stevens responded, pointing out that "as regards the litho department, everything had been very satisfactory. Only twelve months ago it was little more than an idea, now it is a reality, with twenty-one willing hands at work," concluding his remarks with the hope that it would still progress as it had done in the past. After several other toasts had been duly proposed and responded to, a stroll was indulged in, a portion of Charnwood Forest being visited, and the beautiful scenery duly enjoyed. A concert was organised in the midst of this wilderness of trees, rocks, and bracken, songs being contributed by Messrs. Richards, Buckingham, Lloyd, etc., Mr. Richards especially distinguishing himself in his original topical allusions to the business, which met with hearty applause. Shortly after eight o'clock a start was made on the return journey, Leicester being reached about 10.30. A most enjoyable afternoon was spent.



DE MONTFORT PRESS LITHO DEPARTMENT FIRST WAYZGOOSE
THE ARTISTS AND PRINTERS.

The party immediately adjourned to a neighbouring field, where a suitable background being found, several photos were taken of the group by Mr. Stevens, manager of the department. A reproduction of one of the photos, comprising the artists and printers, is presented herewith. On reassembling at the hotel,

THE TECHNICAL CLASS in lithography re-opens on Wednesday, October 4th, at the Ellis Technical School; the Ordinary Grade commences at 8 p.m., the Honours at 9 p.m. Mr. S. D. Hall has again undertaken the position of instructor, which he has so ably filled during the last two sessions.

DERBY.

TRADE is very bad in all branches. Two members of the trade are unemployed, and a majority are on short time.

THE twenty-eighth excursion of the employés of Messrs. Bemrose & Sons, Limited, took place on Saturday, August 12th. At 5.20 a.m. two trains containing nearly 700 employés and their friends left Derby for Llandudno, and at six o'clock another train containing over 420 more started for Liverpool. The Llandudno contingent arrived at their destination about 9.30. Many of the party climbed the Great Orme, from the summit of which magnificent views were obtained which quite repaid for the climb. The Marine Drive around the Great Orme's Head was well patronised, as was also the magnificent pier. Others availed themselves of the steamboat excursions to Beaumaris, Bangor, Menai Bridge, &c. Conway Bay and Castle were also visited, and the day wore on to its close all too quickly for the visitors. The Liverpool contingent arrived at their destination about nine o'clock, and visited the docks, museum, and New Brighton, and other places and objects of interest. Arrangements had also been made for a trip on the Manchester Ship Canal, and to visit the Cunard Steamship Co.'s Atlantic Liner, *Servia*. The Liverpool contingent arrived home shortly before midnight ; the Llandudno contingent at 12.45. The weather was all that could be desired. A printed programme was given to each employé describing the various places of interest and the easiest way of finding them, which proved very useful. The firm presented each employé with a railway ticket, in addition to paying the day's wages, and it need hardly be said that this generous treatment was very highly appreciated. Special facilities were granted for a week's stay, of which a good number availed themselves.

THE Trades Council held a very successful Labour Demonstration on September 2nd, an interesting procession being followed by a highly successful open-air meeting on Chester Green.

DURING the month of August a Trades Exhibition was held in the Drill Hall, at Derby, and together with the two musical performances daily by a ladies' orchestra, formed an interesting and enjoyable resort for the residents of the locality. Connected with printing in one form and another there were several exhibits which could not fail to catch the eye. Mr. F. Carter, of Irongate, was represented by a well-stocked stall of stationery, photographs, and excellent samples of bookbinding. In another branch of printing, viz., wallpapers, Wilkins, Ellis & Co. had a most instructive exhibit, consisting of the twelve colour rollers used to print the wallpapers hung at each end of their stall.

In the passage at the Drill Hall was a frame of fine collotype prints, and Mr. F. Boyes had a fair show of photographs, including some good enlargements.

In the machinery section was an oil engine, which shewed capital results ; such an engine could be most satisfactorily used where gas is not available. The Wilkins Printing Co., of Derby, completed the printing exhibit with a machine in motion.

NOTTINGHAM.

At the Victoria Hall, Nottingham, a local exhibition has just run its course. The afternoon and evening were enlivened by the performances of a ladies' band, and singing by a Tyrolean choir. In direct opposition to the Derby exhibition, printing was conspicuous by its absence. The only attempts to represent the craft were by R. T. Mounteney, W. J. Miller, and G. F. Wilson. R. T. Mounteney had a wall-frame of photolitho samples, a highly finished illuminated address, decorated with pearl beads, etc., and some examples of the rulings which are used by lace and other fabric pattern designers to work out the patterns upon. These rulings are apparently printed by engraved steel rollers, which must be cut with the utmost precision and prepared in all gauges. This method is very expensive, and forms a strong contrast to the apparently easier method employed by G. F. Wilson, who exhibited these rulings only. He works them out in the same way as a paper ruler, and obtains results which are sufficiently accurate, at a cheap rate, to meet the requirements of almost anyone in the profession.

The exhibit by W. J. Miller consisted wholly of crayon portraits, enlarged and copied from photographs. The examples are of such a nature as to warrant them being considered of high merit.

The Nottingham exhibition was extended to include a representation of old Nottingham, which certainly formed a very attractive part. In other respects it was mainly of local interest, and gave further opportunity for shewing how highly trained our blind fellow creatures can become.

MANCHESTER.

THE members of Messrs. H. Blacklock & Co.'s chapel, Manchester, held their annual picnic on Saturday, August 5th. The place selected was Liverpool, via the Ship Canal Circular Tour. The party left Manchester (Central) for Northwich at 7.28 a.m. After viewing the effects of the subsidence at this place, and some partaking of breakfast, the party embarked on the steamer *St. Maw's Castle* at 11 a.m. for Eastham. At Saltport the steamer was lowered into the Ship Canal proper, and here a fine view of the River Mersey was obtained from the top deck of the steamer. From Saltport the journey was continued to Eastham, arriving at that place about three o'clock. After a short stay at Eastham the party crossed by the ordinary ferry boat to Liverpool, arriving about five o'clock, after a very pleasant trip. Tea was then partaken of, and the members spent the remainder of the day in various ways—several making an inspection of the docks, shipping, and also engines and dynamos connected with the overhead railway. Altogether the outing was a very enjoyable one.

EDINBURGH.

TRADE is very bad in Edinburgh at present, although it is not expected to continue so for any length of time.

We regret to announce the failure of the old established firm of Messrs. White & Eagle, George-street, and also the Photoglyptic Co., Stockbridge.

The majority of printing and litho establishments are very slack, though the firms of Messrs. Banks & Co., and A. Ritchie & Son, are pretty busy.

The local branch, A.S.L.P., has been making efforts to increase its membership, and has been fairly successful so far.

The twenty-sixth annual report of the Edinburgh and District Trades Council shows that very substantial progress has been made during the past year.

A litho technical class here would be of great benefit to the trade.

STOKE-ON-TRENT.

ON Friday, September 8th, the adult employés of Messrs. Allbut & Daniel were entertained to dinner by the firm in commemoration of the marriage of Mr. Percy H. Daniel. About 130 were present, and thoroughly enjoyed the excellent catering of Mr. J. Niel, of the "Market Tavern." A good programme of music was gone through by the workpeople, assisted by a few friends. The usual toasts were heartily carried and suitably responded to, the cordial relations between employers and employed being well evidenced.

The festivities were continued on Saturday, Sept. 9th, when the junior employés were invited to a very substantial tea at the Hanley Coffee House, Piccadilly. An excellent programme of music was provided for the youngsters, and Professor Hutchinson, the ventriloquist, delighted them with his figures and singing. Hearty cheers were given for Mr. and Mrs. P. H. Daniel, Mr. and Mrs. C. J. Daniel, the firm, Mr. J. Barcroft, and the committee who superintended the arrangements. A vote of thanks was also passed to Mr. Geo. Wright, who ably officiated as chairman.

HANLEY.

THE annual outing of the members of the Hanley branch of the A.S.L.P. took place on Saturday afternoon, August 26th, at Buxton. Travelling in a saloon attached to the 1.30 train, Buxton was reached about 3.45. A good tea was provided at the "Railway Hotel." After tea the party visited various places of interest in the town and neighbourhood, and after a quiet stroll, they proceeded to the hotel, where the remainder of the evening was spent in a convivial manner. The return journey was made at 10.15 p.m., after a most pleasant and interesting outing.

Society Meetings in Congress Week at Belfast.

AMALGAMATED SOCIETY OF LITHOGRAPHIC PRINTERS OF GREAT BRITAIN AND IRELAND.

ON Thursday, September 7th, the above Society held a meeting at Crozier's Restaurant, Belfast, presided over by Mr. Quin, the chairman of the Belfast branch. Amongst the visitors and guests were Mr. G. D. Kelley, J.P., the general secretary of the Society; Mr. Schofield, the secretary of the Society of Lithographic Printers in London; Mr. Dewar, of the London Machine Minders' Society; Mr. Eddy, of Glasgow; Mr. C. Harrap, general secretary of the Amalgamated Society of Lithographic Artists; and Mr. W. Cromack, of the firm of Messrs. Blades, East and Blades, of London. The proceedings were of a thoroughly harmonious character, commencing with a supper and followed by a musical entertainment. At intervals toasts were proposed and responded to.

Correspondence.

To the Editor of THE BRITISH LITHOGRAPHER.

DEAR SIR,—I must congratulate you most heartily on the continued improvement of the B.L., the last number is especially good.

I should like to point out to you that the method of preventing the edges of paper marking in the reply to "Question V.," page 195, is only possible when the stone is printed so that the top edges of the paper are from the printer; the scraper could not be "nicked" otherwise, and this means in many cases the use of larger presses than otherwise necessary to print the stone, because some of the paper must lie over the edge of the stone, whereas if it was put in a press the other way the paper is out of the way at once. In the office I used to work in we always put the work so that the top edge of the bill-heads was on our right hand, and then it was easy to lay the paper, and those sheets that overlapped the edge of the stone were out of the way. As we laid the transfers so that the edges just caught against the blue line at the bottom of the heading, we did not bother about "packing" in any way. For "note heads" we used to fold the paper first, and then put four transfers on a 12 x 13 stone, "head to head," with sufficient space to allow of them being easily laid. Of course the paper overlaid the edges of the stone, but with care it never marked. Machine work, however, soon drove the ordinary printing of both bill and note heads from the hand press, as the latter cost so much more.

You will possibly remember my mentioning in a former letter how useful I had found "lithophile" to be. A medical friend who saw it said he thought the following formulae would act as well:—

Wood tar	..	..	2 fluid drams,
Xylox	..	..	3 " ounces.
Bitumen (about)	..	..	2 drams (apothecary).

(The bitumen is simply to harden the film of solution on the stone, and it readily dissolves in the solution.) This I have found to work very well, and to act just the same as the "lithophile" does. By the way, I was speaking about it to an artist in one of the biggest of the Leeds firms, and he told me they had tried "lithophile," but gave it up as they thought it thickened fine lines. My own impression is that if the fine lines do look thicker, it is because they are so much firmer, and consequently hold more ink. Perhaps you will kindly say what your experience has been. I remain, yours truly,

Headingley, Leeds.

H. E. GRANTHAM.

THE effect of atmosphere upon relative tones is to diminish the difference between them; to lower the lights and lighten the shadows. The greater the distance between the observer and the objects, the more the atmosphere and the less the difference between the tones, which are more tender and subtle. The effect of atmosphere upon colour is similar. It makes all colours more grey, so that the difference between them is less distinguishable.—FRANCIS BATES,

Answers to Correspondents.

AN enquiry from W. Burnell, *re* the best method for reversing, more especially for fine work, will be best answered by quoting from a reply to a correspondent in one of our earlier numbers. For reversing a job, the following method may be recommended:— Roll up well and protect by resin, etch with nitric acid till it stands in relief, allowing for thickness of resinous coating. Wash ink, etc., off with turpentine, and wash the whole stone quite clean with water, using clear water with about one per cent. of acid for the final wash. The stone must be *absolutely clean* before putting the litho ink on. When the stone is dry, cover the work to the extent desired for ground with litho writing ink, let it dry, and roll up with printing ink. The work and ground now being equally black, the ink has to be removed from the parts in relief, so that they are reversed from black to white. Take a long piece of flat snake-stone and polish away the surface of the raised portion until the design becomes quite clear. Gum the stone, dry, and roll up. The polishing should be continued till the stone is nearly level again.

IN reply to Mr. F. Hodge, of Melbourne, Australia, the production of transparencies depends very much upon the printing. In printing, every part which is required to have a certain amount of body must have white under it; and only those portions, such as filigree ornament, "shadows" of letters, spaces in letters, etc., which are required to be as transparent as possible, should be left uncovered by white. The paper used is of very little importance, so long as it is not over thick, is strong, and when made transparent does not look cloudy. The varnish must be one which contains a transparent gum and resin, and almost any of the pale oak varnishes sold for wood varnishing purposes are suitable for transparencies. As a rule the varnish is put upon one side only.

IN reply to Mr. H. R. Bridges, of Highbridge and Bridgewater, we are scarcely in a position to give the absolute advice required. It is possible that by perusing the article upon the rotary in our last number some idea may be gleaned as to the requirements of a rotary, and how far such adaptations could be applied to the double royal Myer's "Caxton" machine. In that article it will be seen that the machine has been made for printing the Hull zinc plates, exactly as you require to use your printing machine. In the details of the machine it is advisable to consult the patent to see how the plates are fastened on the cylinder. The article and sketch do not fully describe that point. The reply to your letter was purposely held back until after the publication of the article referred to, so that the references could be more readily made.

IN reply to Mr. J. L. Allday, of Birmingham, the composition of a good writing transfer paper similar to sample, is:—Make a size from parchment clippings, which, when cool, will set in a jelly. To the warm solution of parchment add flake white ground in water.

The quantity of flake white should be small for writing paper, and greater for plan and other paper, and can be varied at will. In fact, all that is really necessary for a writing transfer paper is an even film of parchment, and for convenience a little colouring matter, as gamboge. This paper is very easily made, and may suit your purpose until full recipes appear in the chapters on "Practical Lithography" in the course of the next two numbers.

ENQUIRERS *re* the new rotary zinc plate printing machine, noticed in B.L. No. 12, are advised to communicate with Mr. J. McAleese, 18 Rosehall-street, Glasgow, who will furnish full particulars.

Illustrations for "Mezzotint" Article.

RESPECTING the illustrations for the article on "Mezzotint," the writer further adds:—"I show a small mezzotint plate in two states, the upper being the first proof taken after the general design had been lightly scraped out. In the finished proof I have sacrificed truth to some extent for the sake of showing the strong black which is the characteristic feature of the process. Very little of the burnisher has been required, only a little in the lower part of the sky. Nearly all the work has been done by the scraper alone."

The following gentlemen ground plates for mezzotint:—Mr. A. C. Alais, 24 Avenue-road, Hammersmith, W.; Mr. J. B. Pratt, Dartmouth Park-avenue, N.; Mr. F. G. Stevenson, 31 Claremont-road, W. Kilburn, N.W. The plate for the illustration given was provided by Mr. Alais.

SMALL ADVERTISEMENTS.

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Three lines (21 words) of the following classes, prepaid:

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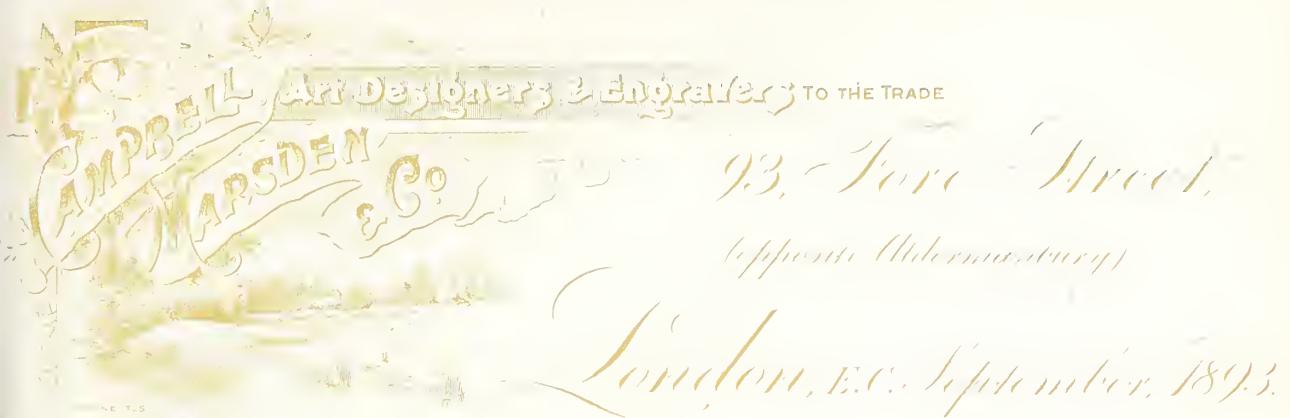
SITUATION WANTED.

WANTED.—Re-engagement as Foreman Lithographer or Manager (age 33). Ten years foreman lithographer in last place. Experienced in all classes of work, photo-litho and collotype. Can introduce a speciality.—"ALPHA," B.L. office, Leicester.

LITHOGRAPHERS.—Young man seeks situation with a first-class printer for two years, to complete his apprenticeship; used to machine and press.—A.G., 12 Meads-row, Lambeth, London, S.E.

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REPRESENTATIVE wanted for PRINTING INKS, COLOURS, and MATERIALS, for Midlands and South-West of England.—State salary and terms required, also experience, to "T.W." BRITISH LITHOGRAPHER office, Leicester.



London, E.C. September 1893.

Dear Sir,

Owing to the continued steady increase in our business, we have found it necessary to add to our Staff of high class Engravers, and remove to more commodious premises at—

93, - Fore Street.

Our improved facilities will enable us to execute all orders promptly, & keep up the high standard of quality at which we have always aimed. We thus merit a continuance of your esteemed orders, which we take this opportunity to respectfully solicit.

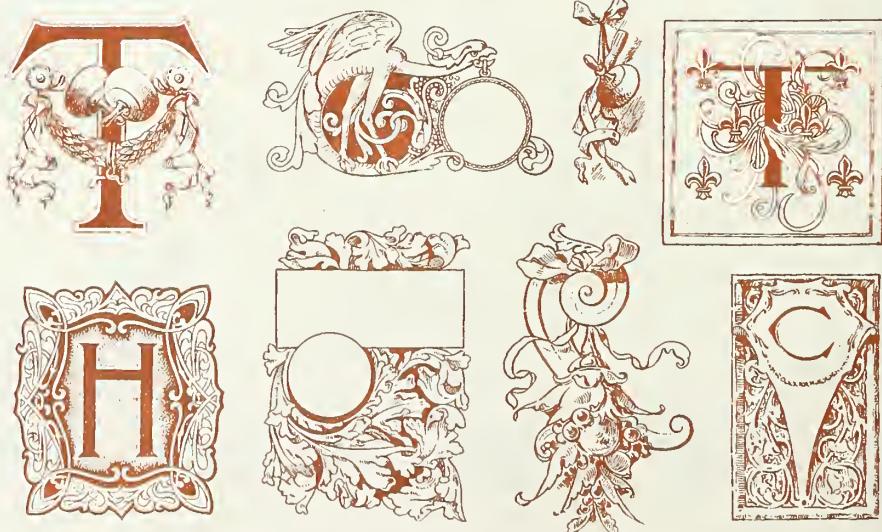
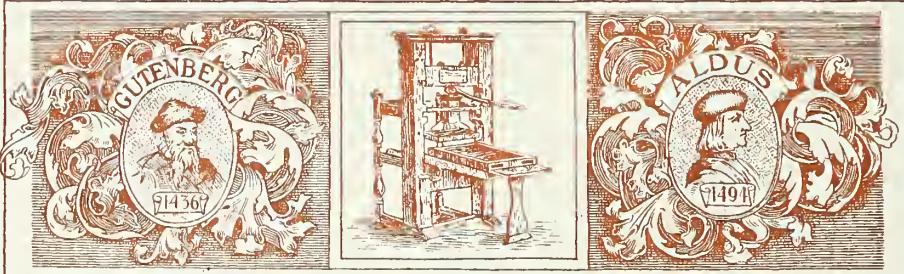
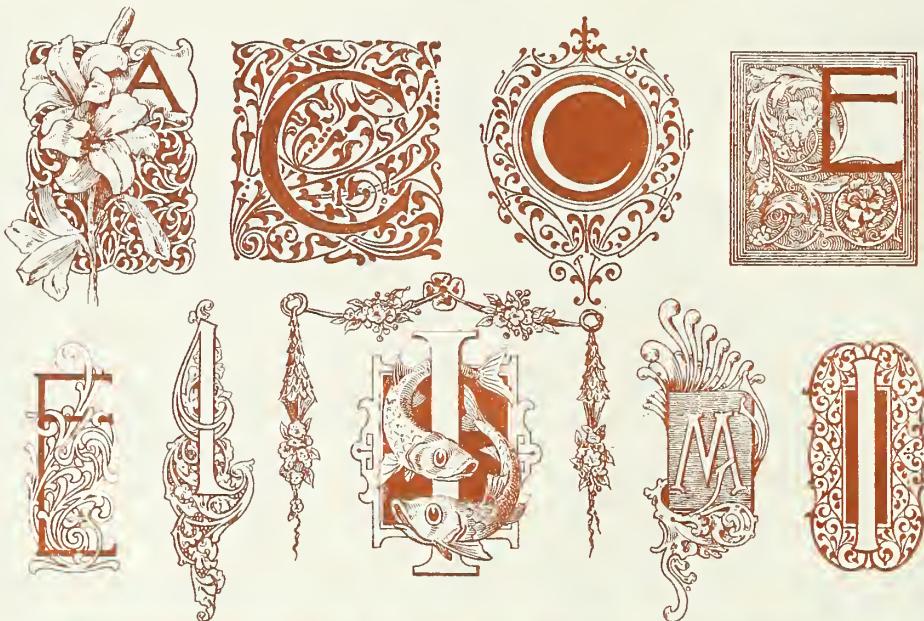
Thanking you for past favors.

We are,

Yours truly,

Campbell, Marsden & Co.

PAGE OF SUGGESTIONS. Number 2.



DE MONTFORT PRESS LITHO LEICESTER & LONDON.

Printed on GROSVENOR, CHATER & CO'S Celebrated Fine Art
"Acme" Printing Paper.





CONDUCTED BY ROBERT HILTON.]

VOL. III.—No. 14.

DECEMBER—JANUARY, 1893-94.

[CHARLES HARRAP, ASSISTANT EDITOR.

PRICE EIGHTPENCE.

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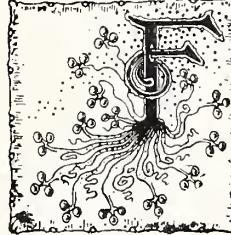
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OUR SUPPLEMENTS.

THE STUDY OF FRUIT.

IRST and most prominent in this issue is the attractive fruit piece forming Messrs. Mander Brothers' special supplement, which has been printed in eleven colours and gold from retransferred stones on Messrs. Smith and McLaurin's chromo paper, of a quality and substance specially adapted for seed catalogue covers. Messrs. Mander Brothers' inks used are: canary chrome 0740; mid. chrome 0744; Chinese blue 0714; Prussian blue 0278; burnt umber 0764; vermillion 0542; crimson lake 0557; and scarlet lake 0573; printed in the following order: gold, yellow, green, vermillion, light blue, light red, light grey, dark red, dark blue, light brown, dark brown, and dark grey. This supplement will be useful in designing labels, etc., for the wine and jam trades. The roughing was produced with planed iron plates, and gives a good imitation of the texture of the canvas so much used by artists.

THE SPECIMEN OF ENGRAVING ON COPPER shewn by Messrs. W. R. Royle & Son, of 96 Newgate-street, E.C., shows adequately that they are capable of producing the finest class of engraving for commercial purposes, with freshness and freedom in the designs. This supplement was printed on H. & L. Slater's, Ltd., tinted art enamel (sea green, but is made in a variety of other shades) from retransferred stones with Messrs. Mander Brothers' inks: myrtle green lake 0685; and for the tint, art green (reduced)



The Latest about Coloured Photos.



CHIEF event of the recent Photographic Congress was the exhibition by Mr. Leon Warnerke of the latest results with Professor Lippmann's process of photographing colours direct in the camera, and fixing the pictures so obtained, which is what the public understand by "photography in natural colours," and is a subject upon which they have often been deceived. The pictures shown at the meeting were executed by formulæ chiefly devised by an Austrian, Herr Valenta, and afterwards somewhat modified by Messrs. Lumière, the dry-plate makers of Lyons, who were the producers of the photographs placed on view. The colours being iridescent, the plates have to be viewed at a particular angle. They were placed at this angle in relation to the screen, were next illuminated by a parallel beam from the electric lantern, and then, by means of a projection combination, the reflected image of each was thrown in succession upon the screen. The projected images, of course, had no iridescence, but resembled oil paintings illuminated by a beam of light; two of them closely resembled Constable's paintings in artistic excellence and in the beauty of the colours. Portraits taken with four minutes' exposure were also shown; they were pleasing, presenting good flesh and other colours, and nothing abnormal, except that gold came out with almost metallic brilliancy, instead of a dead yellow colour. Captain Abney, who projected the photographs upon the screen, was so pleased with them that at the end of the discussion he asked the permission of the meeting to show them on the screen a second time, and Mr. Warnerke was loudly applauded when he sat down after declaring M. Lippmann's revelation to be the greatest discovery connected with photography in modern times. But two short years have passed since one of our contemporaries were printing utterances depreciating Professor Lippmann's discovery, questioning its genuineness, and asserting that in any case the results were not due to the interference of light; such utterances came from persons who did not understand the subject and were incompetent to deal therewith. It was a precedent to the recent "Proud Turk" case, but spread over a wider area. Had more trustworthy information been in all cases published among British photographers, the honour of having somewhat perfected Professor Lippmann's discovery, from a practical rather than from a scientific point of view, might have now belonged to England instead of to France. The genuineness and the theory of the discovery have never been questioned at all in the chief English scientific circles. They are self-evident.

"THE BRITISH LITHOGRAPHER is giving great satisfaction and is always eagerly looked for."—
JAMES B. AITKEN, Dundee.

Classes for Instruction in

Practical Collotype Printing.



HERE has been established in connection with the Glasgow branch of the British Typographia, a students' class for the practical demonstration of collotype printing. The syllabus comprises eight fortnightly lectures (commenced Monday evening, November 13, 1893) at eight o'clock in the evening, in the Lecture Hall of the Glasgow Typographical Society, 102 Maxwell-street, Glasgow, by Mr. Wm. A. Denovan, senior partner in the Heliogravure Printing Company, West Regent-street, Glasgow. Mr. A. Dean, sen., of Messrs. Gilman & Dean, Glasgow, presided at the opening lecture. The fee for the course is 10/6 each member. At the time of writing upwards of forty students had joined the class, some of them coming from as far as Edinburgh.

The lectures cannot fail to prove interesting to employing lithographers, foremen, and apprentices, and, in view of the extended application of collotype printing, we should like to see them next session introduced into all our large towns. The Glasgow classes are being promoted by Mr. Harry Smith, 111 Bothwell-street, Glasgow, from whom all information can be obtained.

The following is the syllabus:—

November 13th, 1893.—General remarks. Outline of the art and practice of collotype. Its relation to other printing processes. The work it is adapted for, &c., &c.

November 27th, 1893.—Photographic aspect. The reproduction of negatives by the wet plate and dry plate processes. Retouching negatives, &c., &c.

December 11th, 1893.—Preparation of plates. Description of drying stove, &c. Demonstration—preparing plates. Remarks on gelatine, &c., &c.

December 25th, 1893.—Transferring of Image, &c. Washing, drying, and etching.

January 15th, 1894.—Demonstration; in Messrs. Furnival & Co.'s showroom. Preparing machine for work.

January 29th and February 12th, 1894.—Demonstration; in Messrs. Furnival & Co.'s showroom. Machine printing, &c.

February 26th, 1894.—Errors in manipulation, and concluding remarks.

The lectures take approximately twenty minutes to deliver; twenty minutes are devoted to discussion, and twenty minutes for lecturer's reply.

As Mr. Smith is promoting the course of lectures with the sole object of increasing the interest in, and establishing the art of, collotype printing, the balance of the members' fees (if any), after disbursing the necessary expenses of the class, will be applied in whatever manner the majority of members may decide.

IT is understood that a conference upon the Merchandise Marks Act will take place in London on December 7th next, for the purpose of drafting amendments to those Acts. This conference is the outcome of a resolution of the late Trades Congress at Belfast, and anyone who can communicate any matters of direct interest should forward the same to Mr. C. Fenwick, M.P., 19 Buckingham-street, Strand, London, W.C.

Trade Reports.

(From our Special Correspondents.)



GLASGOW.

In the matter of technical instruction, Glasgow seems to be awaking to the fact that it is as necessary there as in other large commercial and manufacturing centres. Looking back over last year's work, it appears that under the City and Guilds of London Institute there were fifteen classes in Glasgow, having 543 pupils, of whom 119 passed at the examinations in 1893.

This latter figure does not compare favourably with several other towns such as Bolton (Lanc.), where 246 passed; Dundee, where 126 passed; Leeds, 123; Manchester, 313; and Preston (Lanc.), 115. But there may have been more technical instruction given than appears by results in examination. This seems the more probable from what is now going on in that city. One of the most complete sections of the present Glasgow and West of Scotland Technical College is the Industrial Art Department, consisting of (1) general art classes, under Messrs. Crosskey, Graham, and Morton, on the lines of an art school curriculum, and comprehending all the branches of drawing; (2) technical and applied art classes, under the same teachers; (3) painters' work, under Messrs. M'Lean and J. B. Watson, including practical work for apprentices in graining, staining, and marbling; (4) ornamental metal work, under Mr. F. P. Fletcher, and consisting of a thoroughly practical section, combined with lectures; (5) lithographic drawing, under Mr. J. G. Murray, comprising a series of practical lessons upon the use of the crayon and pen, and rubbed tint for poster work; (7) lithographic design, under Mr. R. Clouston Young, consisting of practical demonstrations in the use of colours and form as applied to design, and the drawing of lettering; (8) lithographic printing, under Mr. Wm. Carter, being a series of twenty lectures, or more, covering the whole ground of lithographic printing; (9) cabinet and furniture making, under Mr. D. King, being a course of lectures, supplemented by (10) workshop instruction, under Mr. C. Milne, and (11) wood carving and modelling in high and low relief, by Mr. G. Smith; the whole series being concluded with (12) tile and pottery painting, by Mr. G. Graham. The lithographic section is in every way most complete, and the classes have a healthy ring about them which should prove of immense good to the trade in general. Some three or four weeks ago Mr. Carter's class had an attendance of forty-seven, with every prospect of an increase.

ANOTHER section of technical instruction, which does not appear in the syllabus, was a magnanimous offer to the lithographic artists of Glasgow to loan them a

room for their own special use in studies from life—not nude, as many classes are too often constructed, but from everyday life, draped, as required for lithographic drawing.

ENTIRELY apart from this college, another section of technical instruction is to be found at the Lecture Hall of the Glasgow Typographical Society, Maxwell-street, being a series of eight lectures and demonstrations upon "Collotype," by Mr. W. A. Denovan (of the Heliogravure Printing Company, Glasgow). These lectures having been instituted by Mr. H. Smith (the Scotch representative of Messrs. Furnival, of Reddish) they will be partly held at the above hall and partly at the showrooms of Messrs. Furnival, in Bothwell-street, where machinery will be at the disposal of the teacher. The syllabus will be found on another page.

It would seem from various rumours that the true spirit of the Technical Instruction Act is not quite appreciated by the County Council of Glasgow, and they have not so far given the full support and encouragement to true technical education which one would expect in such a large trade centre. It may be from this cause that private efforts have been made to meet the wants of the artisan population, so as not to allow the products of Glasgow to fall behind those of other large commercial communities.

EDINBURGH.

IT was confidently expected that with the late autumn would come the long looked-for improvement in trade, but unfortunately trade here remains in a very depressed state, a large number of men being still unemployed.

IT is satisfactory to learn that Messrs. White and Eagle, mentioned in last issue, have arrived at a settlement of their difficulties and will again carry on business.

THE Tessaro Printing Association (formerly R. Howe & Sons) have closed their establishment, with the result that the whole of their employés have been thrown out of work.

MESSRS. BANKS & CO. remain very busy and have recently laid down another large machine.

THE litho artists are waking up, and have decided to send a representative to the local Trades Council.

DERBY.

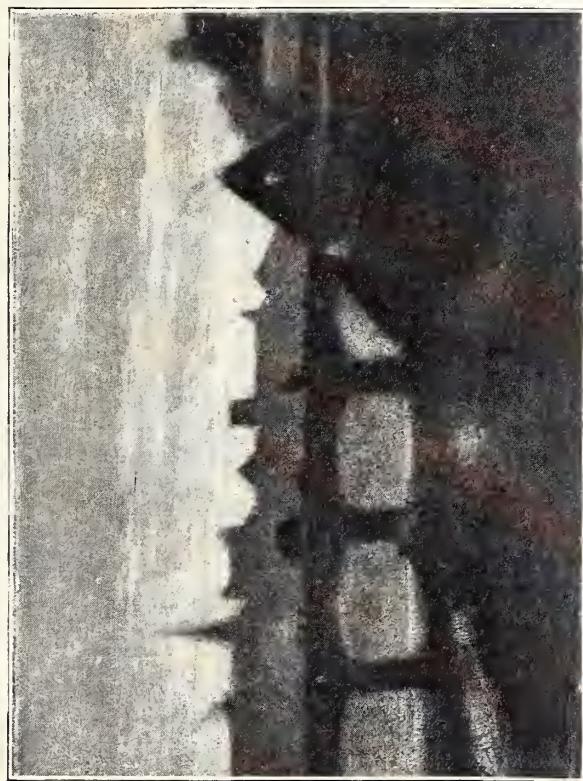
BUSINESS is somewhat brighter than when last reported, although still only moderate. Short time has now ceased.

AMONG the five labour candidates for municipal honours, two were members of the local branch of the Typographical Society.

LIGHT PRODUCING SOUND.—Probably one of the most wonderful amongst recent scientific discoveries is the fact that a beam of light produces sound. A beam of sunlight is shewn through a lens on a glass vessel that contains lampblack, coloured silk, or worsted, or other substances. A disk which has slits cut in it is made to revolve swiftly in this beam of light, so as to cut it up, thus making alternate flashes of light and shadow. On putting the ear to the glass vessel strange sounds are heard so long as the flashing beam is falling on the vessel.

SANDPAPER PROCESS.

MEZZOTINT.





Etching, Drypoint, Mezzotint.

BY HUGH PATON,

Associate of the Royal Society of Painter-Engravers.

MEZZOTINT.



BEFORE passing from the question of processes, it may serve some purpose to describe one or two allied methods of working upon metal, which may be occasionally useful to the etcher in his work; and I do so briefly, if only because I have not had practical experience of them. I give them, however, for the sake of completeness, being desirous that these papers should be, as far as possible, a complete *résumé* of the etcher's art. I take the information from the best authorities, of whom Mr. Hamerton is perhaps the chief.

AQUATINT.

Aquatint is the art of engraving upon metal in tones bitten by acid—of etching in tones, in other words. It is so called because of the close resemblance it bears in the proof to the art of water colour, an aquatint printed in black or brown being remarkably like a drawing in Indian ink or sepia. The method of grounding the plate is to cover it with a solution of resin dissolved in spirits of wine. As this dries the resin granulates, so that it looks under a magnifier like a lot of little islands closely crowded together with narrow channels between. The plate should be warmed just enough to make the particles of resin stick to the copper. Apply the acid as in etching. It attacks the copper exposed between the islands, and the tone so produced has a delicate quality quite its own. Variety of tone is obtained by using three or four solutions of different strength, that is to say, containing different amounts of resin. The strongest should be thin enough to flow easily, and the finest almost as light in colour as the pure spirit. The method of procedure is to ground the plate first with the finest solution and to bite a short time, after stopping out with varnish all those parts that are to print pure white. The ground is then cleaned off and the next strength of solution used, the lightest tones and the whites being stopped out in turn, and so on to the deepest. The deeper tones take better to the surface of the plate, and gain strength from the slight granulation of the lighter tones; hence *all* the surface except the pure whites should be bitten after the application of the finest solution, and the next deeper bitten again on the top of that. Occasionally, however, variety might be obtained by stopping out portions of the darker tones from the first; this might

be done where luminosity is desired. The weak point about aquatint is that the range of tones is hardly sufficient for some purposes. The finest is finer than any that can be got by any other method, but the strongest is hardly strong enough for dark subjects—interiors and such. These are better treated by the mezzotint process. But for ordinary landscape in light, the darks obtainable by the method are sufficient. Sometimes the acid can be better applied by means of a brush to the portions desired, painted on to the plate, so to speak. For use in this way, Mr. Hamerton recommends perchloride of iron in preference to nitric acid.

The tones obtained by this method are quite flat; they are also apt to be hard on the edges, and resort must be had to the scraper and burnisher in order to obtain modulation. Perhaps the method of graduated biting I have described may be useful in this connection.

Aquatint is sometimes used in combination with etching with good effect. I have seen it used to obtain the delicate tones of a sky on plates on which all the rest of the work was etched in line, with very harmonious result.

Aquatint has one good point about it, it wears well in the printing, owing to the absence of burr. The art was much practised in the early part of this century, but has largely fallen into disuse in our time.

SULPHUR-TINT.

Another method of tinting a delicate tone upon the plate is as follows:—Mix flowers of sulphur with olive oil into a thin paste, and paint this on to the parts of the plate on which a tone is desired. The sulphur bites the copper gently, and a few minutes are sufficient in warm weather to produce a decided tone. In colder weather a little longer time may be allowed, the action of the sulphur being influenced by temperature in just the same way as that of the acid. In other words, the chemical action is more rapid in a warm than a cold atmosphere. The method is only useful, however, for comparatively slight tones. The etching is shallow and can easily be reduced by the burnisher.

SOFT-GROUND ETCHING.

This is a method of engraving in imitation of pencil drawing which is occasionally practised. It has, however, as Mr. Hamerton points out, the disadvantage of accomplishing only what can be done as well by lithography. On the other hand, the etcher has always the materials beside him, which he has not for experiment on the lithographic stone. The method of working is to ground the plate with a mixture of ordinary etching ground and tallow, half and half. Upon this is stretched a sheet of tissue paper with a decided grain in it. It should be damped and fastened down at the back so that when dry it presents a tight surface. Upon this the drawing is made with pencil with varying pressure in the ordinary way. When the paper is removed it brings the ground away with it under the pencil lines, and the design is then bitten as in etching, the faintest work being stopped out when sufficiently bitten, and so on by stages to the darkest. This method also gives good results in printing.

PRINTING.

PRINTING is of course common to all the methods of engraving described in previous chapters. No matter how your plate has been engraved, it remains to be printed from before you can see the result, whether good, bad, or indifferent. Every etcher should be his own printer. You must not be content to send your plate to the professional printer. The delay is intolerable, not to say destructive of good work, for the inspiration, if I may use so high a word, under which most good work is done, will not last. While the plate is on its way to the printer the spirit has fled. No, you must learn to print your own plate; it is a part of the artistic process. The plate may even be etched with a view to the manner of printing; but, whether or not, the artist's work is not done until the proof made by his own hand lies before him. Besides, there is in the printing of a plate the same fascination, the same trembling between hope and fear, the same exasperation I might almost say, in the effort to get a good proof that there is in the effort to get a good plate, and the same satisfaction in achieving it; for it is easy to print a good plate badly—it is difficult to print it well.

The method of printing is briefly this. The plate is inked all over freely with plate ink, care being taken to drive it well into all the lines. The superfluous ink is then cleaned off from the surface with suitable rags, in such manner as to leave the lines full of ink while the surface is practically clean. The plate is then passed through the printing press with a sheet of damp paper upon it, backed by a double thickness of printer's blanket to equalise the pressure. The result of the "squeeze" in the press is to drive the damp paper into all the lines, even the most delicate, so as to bring away the ink, and when the sheet is lifted from the plate, the proof of your work lies before you.

Simple as this reads, and simple as it looks to see it for the first time, it is really a matter of great nicety. It is essential that the ink be of good materials and of the right consistency, that the paper be of the right sort and rightly damped, that the pressure of the press be equal and considerable, and, above all, that the plate be cleaned off in just the right way.

MATERIALS REQUIRED.

- Best Frankfort black, say $\frac{1}{2}$ -lb.
- Best burnt umber, in powder, say $\frac{1}{2}$ -lb.
- Burned linseed oil, 1 pint, *thin*.
- Ink-slab, muller, and dabber; palette knife.
- Printing paper (Japanese or Dutch); plate paper.
- Heating box and spirit lamp.
- Stiff muslin, coarse and open; fine soft muslin.
- Printing press with double thickness of blanket.

All these can be obtained from Messrs. Winstone and Son, or Messrs. Hughes and Kimber (see list of etching materials in No. 8). Papers of various kinds from Messrs. Roberson & Co., Long Acre, W.C.

THE INK.

The ink should be fresh made. It can be obtained ready-made, but it is said to lose colour with keeping. It is much better made by yourself as required. Crush

the required quantity of Frankfort black to powder upon the ink slab with the muller, and add the burnt oil, mixing with the palette knife. Then grind with the muller until quite smooth and free from lumps. Not much grinding is necessary, but enough to secure that it is free from grit. The ink should be rather stiff; if too thin, it will come out of the lines too readily when cleaning off with the rag. On the other hand, if too stiff it will not work readily on the plate, or come away easily in the proof. The burnt oil is prepared in three degrees of stiffness: strong, medium, and thin. The last is best for your purpose. The medium may occasionally be of use, but the strong is very objectionable. It requires too great an amount of heat to make it workable, the wear and tear on the plate in applying it and cleaning off is considerable, and the result in the proof is the very opposite of that *mat* tone which is so desirable. Use, therefore, the thinnest quality; it works sweetly and gives a delicate proof. When a brown ink is desired, add burnt umber to the black as required. About half and half gives a good rich brown. This is the only brown I have found satisfactory. Raw umber is too weak, and the siennas, especially burnt sienna, raw and hot. On the other hand, burnt umber is rich and at the same time delicate; I find that it answers all requirements. I get it from the local oil and colour man. The black from the same source, known as "drop black," in powder, is also very good, but the Frankfort black is richer.

PRINTING PAPER.

The subject of papers that are suitable for the printing of etchings is one of profound interest to the etcher. Manifestly, certain qualities are required that are not found in ordinary papers. All hard and glazed papers are inadmissible; the former because they will not *soak*, and the latter because anything in the nature of a gloss in the proof is inartistic, and opposed to the *mat* tone which characterises a good print. On the other hand, papers that are too soft and flimsy are undesirable because they will not stand the necessary handling. A paper of medium weight, either white or of a slight cream or old-gold tone, especially the latter, is the best for all-round purposes. The kinds chiefly used are Van Gelder's Dutch papers, the Japanese papers, and the "real India" (so called, I presume, because it is made in Canton!). All these are hand-made, the first being of the firm kind desirable; the two latter are of the softer kind, but have very desirable qualities. These are of a soft, spongy nature that take damp well and quickly, while the Dutch papers are harder and require steeping for some hours before using. There are also one or two modern papers of a warm tone and slight grain much used in the art magazines for the plate illustrations, which are useful for general purposes. All the kinds can be obtained from Messrs. Roberson & Co., Long Acre, at prices ranging from threepence per sheet upwards.

It may be added in general terms that most *old* papers, except the very hardest kinds, are much valued by artists for printing purposes, mainly on account of the faded old-gold tone which comes of age. The only modern papers I know which imitate

this tone well are the "real India" and some of the Dutch papers. Some of the cream-toned papers are too obviously new to give a really artistic proof. Old paper, kind for kind, is better than new, because the decay of the size used in manufacture, which causes the faded tone so much valued, also tends to reduce the hardness. Most old papers of the right kind are therefore much to be desired, and it is perhaps not surprising that stocks, of old Dutch hand-made papers especially, have almost disappeared from the market of late years, and fetch big prices when they do turn up. A publisher told me a couple of years ago that he had had great difficulty in getting together a sufficient supply of *fly-leaves of old books* to get up a small show of etchings consisting of only fifty plates!

Of all the modern papers I know, the two kinds, the Dutch hand-made and the "real India" are the best. The Japanese are very good in many ways, but are often objectionably yellow. The Dutch paper is stout enough to stand reasonable handling. Cut in sheets to suit the size of your plate, it may be placed bodily in water for a few hours, and then laid in single sheets between blotting paper. Or, if not to be used immediately, the sheets may be placed on one another and left under a heavy sheet of cardboard with weights upon it to drive out the superfluous moisture. Remove the surface wet by placing between blotting paper for a few minutes before printing. The "real India" is too flimsy to be put in water: it should be laid upon the blotting paper and damped with a sponge. Make it thoroughly wet with perpendicular dabs of the sponge, avoiding friction, and leave the blotting to take out the superfluous water. The paper, of whatever kind, should be thoroughly limp when it goes into the press, but free from surface wet. An objection to India paper is that it is flimsy and difficult to handle when wet, but it gives very delicate results, and for my own part I should be loth to discard it.

Before damping, brush with a soft brush to remove loose particles. The India paper is especially liable to have sand and other foreign matters partially embedded in its surface. It should be examined in a good light before damping, and all such impurities removed. The harder paper should be brushed with a harder brush in order to slightly raise the surface fibre. This gives a richer effect in the proof, but it should not be overdone.

In addition to a supply of these two kinds, a stock of the so-called "plate paper" should be laid in. It is of a soft spongy nature, and wets through at once. It is used as backing to the sheet which takes the proof. It should never be used to print upon. It is damped in the same manner, either by sponging or dipping bodily in water for a few minutes, and then laying between blotting paper. The thinner papers must be backed with this when going through the press; the thicker kinds do not always require it. The harder kinds of paper owe some of their hardness to the size used in manufacture. This can be obviated to some extent by putting the sheets into warm water to start with, and leaving them to steep overnight.

The reader cannot do better than obtain a few sheets of the various kinds and make experiments with them, as the individual taste of the etcher may determine

the kinds to be used. After experiment, a stock of the most suitable kinds may be laid in for regular use.

At a future time it is my purpose to give some further practical details with regard to some of the materials—how to make a dabber, for example—and also to give you a plan for a simple form of hand-press, such as you could make for yourself at a moderate cost with the aid of a local smith and joiner. Meantime, with the general information given above, we may now proceed to make our first proof.

THE ILLUSTRATION.

In the last number the illustrations shewed a mezzotint plate in two states, the upper one being reproduced from the first proof taken from the plate after the general design had been scraped out roughly. The lower one showed the finished state, but I purposely refrained from carrying the plate quite so far as I should have done otherwise, being desirous to show the exceeding strength of blackness of which the mezzotint ground is capable. I regret to find that a plate prepared in this way reproduces badly, owing, I think, to a sort of coincidence between the mezzotint ground and the method of reproduction, but a general idea can be formed of the effect in the original.

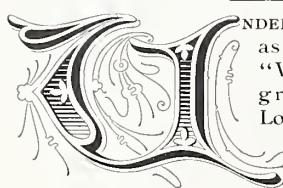
In the present number I take the opportunity to show a plate done by the sandpaper process, which I have described. It will be seen at once that it is not so rich, but, on the other hand, it is abundantly rich enough for many purposes; indeed, I prefer it to the other for a purpose of this sort. Both plates have been slightly touched with drypoint in one or two places. The cost of grounding the mezzotint plate was just twenty times that of the sandpaper used to ground the plate for the present illustration. I ought perhaps to add that the sky was first scraped down and burnished, but the white so obtained was not clean enough to be satisfactory, so I rubbed the tone on with snakestone, and finished up with the burnisher. The lower part of the sky shows the high light of which the burnisher is capable.

I append here the names of one or two professional layers of mezzotint ground, for which I am indebted to Mr. Goulding:

Mr. A. C. Alais, 24 Avenue-road, Hammersmith, W. (who grounded the plate for illustration in No. 13); Mr. J. B. Pratt, Dartmouth Park-avenue, N.; Mr. F. G. Stevenson, 31 Claremont-road, W. Kilburn, N.W.

THE "SPOILERS."—Mr. Spielmann, in a letter to the *Westminster Gazette*, gives some details about the destruction of Burne-Jones's masterpiece, "Love among the Ruins." The picture was entrusted to a foreign firm of art publishers in London for purposes of reproduction. The picture was painted in water-colour, and a printed label to that effect was attached to the back of the picture; yet it appears that an employé washed over the entire surface with white of egg!—a preparation which would have done an oil painting no good, and probably harm, while to a water colour, painted as Mr. Burne-Jones paints it, it is simply disastrous. All the fine touches have been destroyed—the faces, etc., smeared and blurred—and the picture may virtually be said to exist no longer.

The State of the Litho Trade.



NDER such sensational headings as "No Work, no Bread," "Why Four Hundred Lithographic Printers Tramp London Streets in Search of Employment," "English Work Sent Abroad," etc., etc., the "Special Com-

missioner" of the *Evening News and Post* says:—In the course of my conversations with the unemployed, whether they be skilled mechanics of some education and power of reflection, or labourers of fewer opportunities for reading and less incentive for thought, I have found three main ideas current in their minds as furnishing an explanation for the dearth of work. The first is that strikes have much to do with the depression of trade; the second is that foreign competition, both in men and goods, is an important contributing cause of the worklessness among our own people; and the third is the increasing use of machinery, constant improvements in machinery, and therefore displacement of hand labour. I am not now concerned to buttress these ideas by specific facts or arguments; but they seem to me to be operating so actively in the minds of working men that they deserve to be placed on record. Yesterday I met a workman, a lithographic printer, whose statements seem to me to throw an important light upon the first part of the second idea, i.e., the importation of foreign goods. He did not pose as one of the distressed unemployed. True, he had been out of work a fortnight and saw no prospect of getting another engagement. He had, he told me, been everywhere he could think of in search of work, and had met with a negative answer. But he was a single man, and though it was a serious matter for him to be without wage, he was more deeply concerned for men with wives and families in a like position. He told me that his age was twenty-five, but he certainly looked eight years older. A life of labour since early boyhood no doubt accounts for the aged look of many of our working classes. They are old men at a time when the middle and upper class man is but thinking of putting from him the gaieties and follies of his youth. This by the way. That my lithographic printer was a man of keen intelligence, capable of safely generalising on social facts within his ken, may be judged by what follows. He shall tell his story as I elicited it from him:—

"Yes, as you suppose," he said, "lithographic printing is a trade that requires great skill, and very highly trained capacity. I might almost say that it is an art. You go on learning and adding to your skill all your life. You are never perfect in it. You have to go through a five or seven years' apprenticeship, but you are not finished then by any means; the more work you do and the better you try to do it the less imperfect it is."

"Did you serve your apprenticeship?"

"Yes. I served with my father, who had a business of his own; but shortly before my seven years was up

that went to smash. He is now foreman at —, the lithographic printers, and when I left him I had no difficulty in getting work."

"What could you do specifically?"

"I could either make ready or attend to the printing machine" (and here he entered into a technical description of "making ready," with which I need not burden my readers further than by saying that he convinced me that great skill is required in the preparation and production of coloured pictures from an artist's drawing on stone).

"How comes it, then, that so skilled a man as yourself is idle?"

"This is the explanation: there is hardly a shop anywhere, in or out of Paternoster-row, where, on the coloured illustrations of books, on Christmas cards, and the like, you do not see the words 'printed in Germany,' or 'printed in Austria,' or 'printed in Holland,' or 'printed in France.' The whole trade is affected by this Continental competition."

"How many men do you think are out of employment in London now?"

"I could not say exactly, but I should think about 400; and this, you must remember, should be the busiest season of the year. There would not be a man idle in the trade if it were not for this foreign work."

"How do you arrive at your estimation of 400?"

"Well, there are two trade unions—the London Society of Lithographic Printers and the Amalgamated Society of Lithographic Printers of Great Britain and Ireland. The latter Society has a membership of about 3,000, and a branch in London. I belong to the London Society, and there are about 120 on its books now as 'out of work.' A friend of mine in the London branch of the Amalgamated—and it is relatively a small branch, I believe—tells me there are twenty-one on *its* books. So you get to 140. Then there are the non-union men, and there are always a lot of them. There are about 900 members of our London Society, and putting aside all questions of a total of 400, I submit that to have 120 on our books out of about 900, when we all ought to be hard at work, is a serious state of things."

"What is the trade union rate of wages?"

"The two unions I should say are to be amalgamated, a very necessary thing; but the rule common to both is that no man shall work for less than 38/- per week of fifty-four hours. At the same time many do work for less. I know some who are getting 36/-; they can't help themselves; but, on the other hand, it is possible for a man to earn £2 10s. or £3."

"And what do you think are the wages paid to your fellow-craftsmen abroad?"

"I can't say exactly, but I believe they run from 20/- to 25/- per week, and the men will put in sixty-five or seventy hours for that."

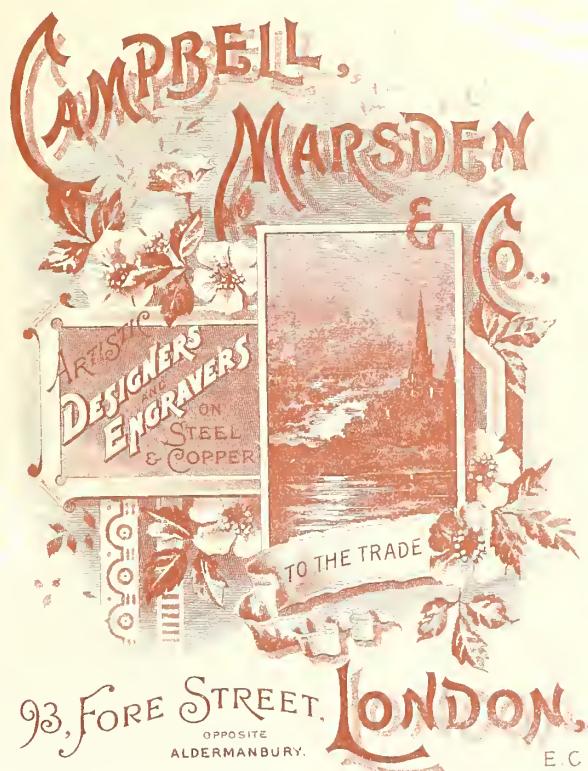
"Precisely: so that accounts for the milk in the cocoanut?"

"Yes. But wait a bit. Does it pay the community in the long run to buy work produced at this rate of pay and hours? What is the effect? Here am I idle. But never mind me. Take the married men. They can't pay their rent; they can't pay their rates; they can't buy proper clothes; they can't buy enough to eat; they are walking up and down London wearing

PRINTED WITH MESSRS MANDER BROTHERS' LITHOGRAPHIC INKS.
Works, Wolverhampton.

Chocolate, Brown. 0811
Biscuit Tint. 0288.

FOR PRICES OF INKS SEE MANDER BROTHERS' LIST,
SENT GRATIS ON APPLICATION.



PRINTED ON SMITH & MC LAURIN'S CELEBRATED CHROMO PAPER.
Works, Johnstone, Scotland. 209C. D.CROWN.

Specimen of Steel-Plate Engraving by
MESSRS CAMPBELL, MARSDEN & CO. 93 FORE STREET, LONDON, E. C.

their lives out for work they can't get, and rapidly qualifying for the workhouse—if they would go there, and most men I know would not go there at any price."

"Is it not alleged that the colour printers of the Continent are more skilful than the English?"

"Yes; but by whom? By the people who for the sake of a short-sighted cheapness buy their work. Show me any work in lithographic printing that I and hundreds of my brother workmen now in idleness can't do as well as any German. We English lithographers claim to be better workmen than the foreigners. We are all-round men: we can do any stage of the process, and work all the colours, whereas the German confines himself to one colour."

"Does it not strike you that this specialisation by the German workman, given proper organisation, results in a better production as a whole?"

"I don't think so; my contention is that we can do the work quite as well as they can."

"Give me the names of the chief London houses who trade in this foreign work."

"Take Raphael Tuck & Sons; all their work is printed in Germany. Look at the coloured work S. W. Partridge & Co. have from abroad. Take Hildesheimer & Faulkner; the work they have done out of the country would keep us London lithographers at it night and day at this time of the year. Take the firm of Nister, Paternoster-row, who have works in Nuremberg. Look in the windows of the Book Society in Paternoster-row; you will see on their coloured work, 'printed in Austria.' Take the trade in coloured posters. The posters for 'Horner's Penny Stories' were 'printed in Holland'; the Adelphi posters were printed abroad; the programme at the Palace Theatre is printed abroad, and so is the poster for 'A Life of Pleasure,' now running at Drury Lane."

"And the music halls?"

"The programmes for the Tivoli, the Pavilion, and the Empire, I know, are done in England; but why should we not do all the work ourselves? I will give you a little incident to show how the Germans treat us. I was at work at —— some time ago, and they were doing some programmes for a German hall, but when the Germans saw the words 'printed in London,' they would not have them and sent them back. Yet it is the German and other foreign work coming here that causes our men to starve."

"Are many German workmen imported by English houses?"

"No; it is far cheaper to import the work. The few foreigners in our trade here are members of our unions."

"Is the importation confined to Christmas card and poster work?"

"Not at all; and this I want to make a very strong point of. It is a singular thing that most, if not all, of the 'religious' colour printing is done abroad—the religious cards, the illustrated tracts, the coloured illustrations to goody-goody books for boys and girls. I was only looking this morning into the window of the Wesleyan Methodist Sunday School Union at Ludgate-circus; they do not seem to have in their window a book or a picture or a scripture leaflet that is not 'printed

in Germany.' And there are other 'religious' publishing houses just the same. Now what I say is that some of these 'religious' publishing places get their money from the public for the purposes of religious propaganda; but what is the effect? Men like me, who might be earning a decent living by doing their work, are walking about the streets. Again I say it is all wrong to contend that they do this work better abroad. Look at 'Bubbles,' the advertisement of Pears' soap, and 'Pears' Annual'; these were done in England."

"What remedy, then, do you suggest?"

"Why, I want you to speak out straight to the British public and tell them not to buy work 'printed in Germany,' or anywhere else than in England. Tell the public to look on the back of Christmas cards and the like, if the imprint is not on the front, and not to buy anything that bears the words anywhere. Tell the West-end theatres, which are supported by men of my class (when we are in work and can afford the price of a seat in the pit), to get their posters and programmes done in England. Tell the public not to buy annuals, coloured books for their children, and Scripture cards when they are done abroad. Surely we English lithographers have a right to ask them to do this. Are we to starve while all this lithographic work, which we could do, is going out of the country?"

DRAWING OR WRITING ON GELATINE WITH BICHROMATE OF POTASH OR GALIC ACID.—The subject of writing on gelatine with an ink mainly consisting of bichromate of potash has been previously mentioned, and it is now well demonstrated that a greasy ink of this character may be easily printed from by observing ordinary precautions. Similarly, a method for retouching collotypes by means of an ink largely containing gallic acid or tannin was introduced, and more recently writing with a similar ink on transfer paper and afterwards transferring the writing or design to prepared damp gelatine, and on which a fatty ink would give impressions. This is the principle of the *Autocopiate Noir* applied years ago by Colonel Waterhouse and others. By it was obtained one of the best methods of practically obtaining gelatine transfers, in view of after impressions of writing or designs done by a special ink on any paper whatever.

THE DREXEL INSTITUTE, Philadelphia, has opened for the new term with thoroughly organised and equipped departments, Dr. MacAlister having given all his time and much labour towards effecting the final completeness of such steps as have been necessarily preliminary heretofore. The urgency and engrossing nature of these duties have up to the present kept the School for Lithography in the background. It is proposed to proceed to this department at once, and to provide equipment and facilities for an early start at practical teaching. Nothing definite as to the instructor selected can yet be announced, but that he will be thoroughly qualified to expound both the theory and practice of lithography in all its branches, as well as the processes allied thereto, may confidently be expected.—*Paper and Press (U.S.A.)*

The Glasgow Lawsuit.

BAIRD v. MILLAR & LANG.



THE lawsuit which has been progressing during the year in Glasgow, seems likely to make itself memorable. It may be remembered that early in the spring the firm of Mr. J. E. Baird entered an action against Messrs. Millar & Lang for infringement of patent. The pursuer claiming that a patent for embossing from stone, or plate, or block in the cylinder machine had been taken out by him in the past two years, and that the defendants were executing work exactly upon the same lines.

At the opening of the case, the bare facts were placed before Mr. Sheriff Guthrie in Glasgow, and the points at issue were narrowed down to whether anyone had embossed in the same way in the lithographic machine prior to the date of the said patent. At that hearing, Mr. Sheriff Guthrie appointed the further hearing to be taken on July 4th and 5th. At this second hearing, much time was spent in deciding whether certain witnesses should be heard. It must be understood that in the Scotch courts it is necessary, when the case is first opened, that a full list of the probable witnesses or the firms from which they are likely to be called shall be stated, and that it is within the power of the opposing counsel to object to any other witnesses being called than those actually named. This difficulty was met with in this case, for the pursuer's lawyer objected to the hearing of Messrs. J. Wright and D. Price, from Hanley, and Mr. T. Bott, from Birmingham and Manchester. In the course of the proceedings, however, the sheriff allowed the hearing of Messrs. Wright and Price on the understanding that the pursuer could seek witnesses from the same source to refute their evidence if possible, and Mr. Bott's evidence was taken as that of an expert, rather than as an actual user of the method. This hearing brought forth voluminous evidence from Hanley that embossing of a very elegant character had been used to improve the pottery catalogues in that district, since 1889 at least. During the evidence, an actual piece of the force or die, which had been used upon the cylinder to force the paper down into the matrix or engraved stone, was produced. Mr. Bott's evidence as an expert elicited sufficient instances of prior use, and of the ordinary power of a lithographic artist to engrave the stone for embossing, rather than such process requiring a highly skilled engraver. In these brief details is summed up the second hearing of the case, which was again adjourned until October 18th and 20th.

At the third hearing the pursuer brought forward his witnesses, including Mr. Daniel, jun., of Messrs. Alibut & Daniel, of Hanley; Mr. R. Atkinson, of Messrs. Atkinson Bros., of Hanley; Messrs. Woodrow, sen. and jun., of Glasgow; and some few other practical men in the business. From the evidence given by these witnesses, very little could be actually gathered as to the maintenance of the patent upon the narrow basis already laid down by the sheriff as

the point at issue. There seemed to be rather a desire to confuse matters by introducing questions of finer detail not set forth in the specification. The point which it seemed desirous to establish was that the embossing done by the pursuer from the lithographic stone in the cylinder machine was superior to any embossing done in anything of a similar way previously. After a long day's hearing the pursuer's case was closed, and the defendants opened their defence. Amongst the witnesses called were Messrs. Lyons, of Glasgow; Mr. White, of Messrs. Lyons; Mr. H. Smith, the Scotch representative of Messrs. Furnival, printing machinists, of Reddish, near Stockport; and Mr. C. Harrap, assistant-editor of *THE BRITISH LITHOGRAPHER*. These occupied the closing hours of October 18th and the whole of October 20th, and in the course of their evidence shewed that embossing of one form or another had been in use for a number of years; that machines have been made specially strong for roughing and embossing for some seven or eight years past; and that, although both Mr. Baird and Messrs. Millar & Lang have embossed to a higher relief perhaps than other firms, yet embossing pure and simple and of a delicate nature has been practised off and on for at least ten years, from the lithographic stone in the cylinder machine. The evidence given in cross-examination all tended to shew that roughing is only a technical expression applied to one particular branch of embossing, and that embossing is the same in principle as roughing. The only difference between Mr. Baird's and Messrs. Millar & Lang's embossing, and that previously practised, is the greater height of the relief—a difference of degree only, and simply applied to a class of work which required higher relief than most of the work hitherto ordinarily produced. Such evidence pointed clearly to the facts that roughing alone, and combined with higher relief embossing, had been in practice over a much longer period than ten years.

As at the July hearing, much time was lost in deciding as to how the evidence of Mr. H. Smith could be taken, since neither his name nor the firm of Messrs. Furnival had been mentioned in the original list of witnesses. However, since Mr. Baird, in his evidence, had mentioned Messrs. Furnival's catalogue and machines, Mr. Sheriff Guthrie allowed the evidence to be taken, subject to objections by the pursuer's solicitor.

The case was not concluded when the court rose on October 20th, and the sheriff appointed November 22nd, 23rd, and 24th for the completion of the case.

The solicitor for the pursuer, Mr. Baird, is Mr. J. L. Oates, of Messrs. Lindsey, Meldrum & Oates; and the solicitor for the defendants is Mr. C. M. Campbell, of Messrs. Gordon, Smith & Parker, 205 Hope-street, Glasgow.

No. 43 of *The Journal of Indian Art* (printed and published by W. Griggs & Son, Elm House, Hanover-street, Peckham, S.E.) contains some magnificent chromo litho reproductions of rich Persian and Indian bookbindings, from the Royal Library at Windsor Castle.

Practical Collotype Printing.

LECTURE BY MR. W. A. DENOVAN.



In the lecture hall of the Glasgow Typographical Society, on November 13th, Mr. Wm. A. Denovan, senior partner of the Heliogravure Printing Company, West Regent-street, delivered the first of a series of lectures on practical collotype printing, which has been promoted by Mr. Harry Smith, with the object of increasing the interest in this particular branch of the printing trade. Mr. A. Dean, of Messrs. Gilmour and Dean, who presided, complimented Mr. Smith on his enterprise, and expressed the indebtedness of those present to him for the opportunity of perfecting their knowledge of the subject. It was a subject in which the interest of printers was growing. In Glasgow they were behind the printers in the south and on the Continent, but the present course would serve to deepen their interest in the art.

After a few remarks from Mr. Smith, explaining the nature of the course, Mr. Denovan proceeded with his lecture. He described the process of collotype printing as one which promised to be in this country, as on the Continent and in America, a leading means for artistic and commercial illustration. A branch of the printing industry, it yielded the finest results of all the ink-photo processes, combining the softness of the photograph with the permanence of the lithograph or engraving; and although rivalled by the half-tone block process and collotype transfers to stone, there was in the results of these two methods

A MECHANICAL APPEARANCE

which collotypes did not possess. The process was in some respects analogous to lithography, but there were points in which a wide difference was found to exist, and in the practical working photography, lithography, and typography were found to mingle—photography with the production of the negative and the transferring of the image through it to the printing plate; lithography in the manner of etching and inking; and typography in making ready for machining. The progress of collotype had been gradual, the process, from

A SMALL BEGINNING

in Edinburgh, having spread through Europe, America, Australia, India, and even China. Modified lithographic machines were used for printing, and glass and copper were the materials most used for carrying the film during printing operations. With regard to the gelatines to be used, Mr. Denovan admitted there were differences in these substances, but remarked that experience would alone convince as to which particular one would yield the best results, and the same was true with respect to the salt used, or sensitiser.

TRANSFERRING OF THE PHOTOGRAPHIC IMAGE

to the plate might be made by natural or artificial light, but the former was the better method, as it gave softer results, and plates seemed to retain their vigour

longer by its means. One could print collotype with a mangle or copying press, but, of course, the best results were obtained from the best machines. Passing these two modes of printing to which he had referred, Mr. Denovan discussed the advantages and disadvantages of the platen, scraper, and cylinder presses. So far as the "life" of the impression was concerned the platen was better than the scraper, but the cylinder impression was undoubtedly the best. As a general rule, which, however, had exceptions, the speed of production in collotype was less than in lithography, and for long runs of cheap work blocks or photolithographs were preferred. As

AN AID TO LITHOGRAPHY

collotype was very valuable. It preserved the "feeling" of the original in a manner that the old process could not readily attain, and thus, while not setting aside the litho artist, it aided him in the more speedy accomplishment and more faithful delineation of the work on hand. By combination printing beautiful colour results could be obtained; and although there were certain obstacles, as collotype was now wrought, which stood in the way of it competing with chromolithography, the beautiful soft tints of the collotype certainly appealed to the lovers of art in a manner in which ordinary chromos did not. Perhaps a combination of the two processes of lithography and collotype might yet give the desired result.

On the motion of the chairman a very cordial vote of thanks was awarded to Mr. Denovan, and a similar compliment was paid to Mr. Dean, on the motion of Mr. Gardner, of Messrs. Gardner & Co. A number of pupils were afterwards enrolled for the course of lectures, and the class gives every promise of success in point of numbers and interest.



IN connection with the visit of the Russian fleet to France, the following queer story comes from Toulon. A journal that published 50,000 chromolithograph portraits of the Tsar, and as many of Admiral Avellan, sent them to Toulon soon enough to be there on the Sunday preceding the Admiral's departure for Paris. In less than an hour all his likenesses were sold, and the public went on demanding more. The shops of newspaper vendors were crowded with persons clamouring for his portrait. Nobody wanted that of the Tsar. Said the agent of the publisher to the vendors:—"The only thing to do, until we can get fifty thousand more of the Avellan chromo-lithographs, is to cut the Tsar's name from the bottom of his likenesses and lithograph the Admiral's instead. Both are bulky, both wear big epaulettes, both are fair, both wear their beards cut in the same way, and are nearly the same age." This was done, with the effect of an immediate sale. Buyers were delighted with their bargain. They had only had distant views of the Admiral, were struck with the fidelity of the portraitist, and enjoyed the portraits the more because the idol of the hour bore, as they thought, "a vague resemblance to the Tsar," who now passes for being the guardian archangel of Republican France.

Clippings.



GENERAL determination exists among American lithographers to do away with the necessity of using the costly and bulky lithographic stones, and to adopt some material which will give equal results and reduce the space for storage that is requisite where the stones are used. The tendency is toward zinc, as aluminium has not won any very decided prestige in the technical field thus far. Certain difficulties, however, have stood in the way, and results are not always as pleasing with the metal surface as with the stone, owing to the lack of knowledge as to what the zinc requires in treatment. Experiments are now going on with this material, and it will not be long before a new zinc plate will be offered to the trade, which is to possess all the features of desirability and economy.—*Paper and Press (U.S.A.)*

THE artistic Japanese have invented and practise a method of printing designs on muslin, and even velvet and crape, which seems to have decidedly "caught on" in the far East. It is only twelve years since, owing to the costliness of foreign-printed muslins, the idea was evolved, and it has now been brought to great perfection and costs but little. The colours are perfectly fast and the designs very beautiful, though the patterns are developed by means of thick paper plates only. The rapidity with which this industry has found favour may be judged from the fact that while less than 14,000,000 yards of muslin were imported for this treatment in 1889, in 1892 the quantity was over 18,000,000 yards. Perhaps in time the invention may be introduced into this country, but at present great secrecy is maintained as to the process by which it is carried out.

A WELL-KNOWN painting and decorating authority, in discussing the application of bronzes, says that the fading of gold bronze is frequently due to applying the bronze to the sizing before it has dried to the right "tack." Put the bronze on when the sizing is a trifle too wet, and the bronze is simply drowned, the liquid matter of the size floating above the bronze. This makes one of the worst forms of bronze fading. Genuine gold bronze applied over a sizing that is just right as to "tack" will wear with almost the glitter, sheen, and tenacity of gold leaf.

DRAW a landscape with Indian ink, and paint the foliage of vegetables with muriate of cobalt, and some of the flowers with acetate of cobalt, and others with muriate of copper. While this picture is cold it will appear to be merely an outline of a landscape or winter scene, but when gently warmed the trees and flowers will be displayed in their natural colours, which they will preserve only while they continue warm. This may often be repeated.

LINE ENGRAVING is dying a natural death. As an art and craft it has been famous, and the reproduction pure and simple from artists' pictures and famous galleries of paintings not so long ago was looked upon as a permanent industry. But other processes and methods have elbowed line work out of the art world, and before long the line engraving may be expected to be confined to bank-note work, office stationery, and plates of a similar character. Messrs Virtue & Co. are now issuing proofs of a reproduction in line of Mr. Holman Hunt's "The Finding of the Saviour in the Temple," with a mournful intimation that this is probably about the last line engraving likely to be published in this country. The art critic of the *St. James's Gazette* remarks that the old race of line engravers, such as Lumb Stocks, R.A., E. Brandard, C. and J. Cousen, A. and J. T. Willmore, etc., has now nearly passed away, and the only one or two remaining, such as Mr. J. C. Armytage, are unable to accept more commissions.

A METHOD OF MAKING GELATINE FOR COLLOTYPE ADHERE TO ZINC PLATES.—M. Husník is our authority for the following:—Apply to the surface of the zinc plate a solution of three grains chromic acid in one hundred grains of water. After the action has been allowed to take place on the surface, wash and stretch over it non-bichromated gelatine, and afterwards a coating of bichromated gelatine. It will be found that the adhesion is most powerful, but great care must be taken to have the plates thoroughly dry, or spots may afterwards appear on the collotype surface.

A New Litho Class at Glasgow.

JUST at the last moment comes a prospectus of this new class, which is conducted by Mr. William Carter, of the well-known firm of Carter & Pratt, of West Campbell-street. The classes are conducted in the Glasgow and West of Scotland Technical College, on Wednesday evenings, from eight to nine, the fee for the course of twenty lessons being 10/6. A small plant, hand-press, &c., has been provided for the practical part of the instruction, and as Mr. Carter is the only practical lithographer amongst the employers of Glasgow, and a man of wide practical experience, the instruction is sure to be thorough. The syllabus is very comprehensive. The opening night was, as usual, free, and Mr. Carter delivered an interesting lecture on "The need for Technical Education in Lithography," Professor John Young in the chair, when there were present about a dozen leading employers and about 170 workmen. Forty-nine students have joined. Mr. Carter solicits the gift of specimens from lithographers willing to help, which will be framed and hung up in the classroom, and used to illustrate his instruction.

From the prospectus of the college, we note that there is also a class for lithographic drawing on Thursdays, conducted by Mr. J. G. Murray; and another class in lithographic design on Tuesdays, conducted by Mr. R. Clouston Young.

The Arms of the Boroughs & Towns of Great Britain.
Containing various points of note for the artist on the ART of BLAZON.

Abersychan. U. S.

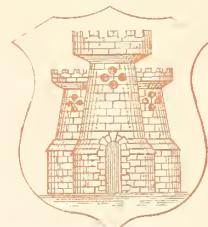


Monmouthshire. 15.296.

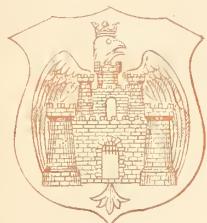
Abingdon. M. B.



Barnstaple. M. B.



Bedford. M. B.

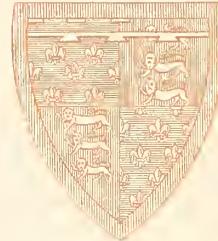


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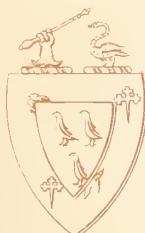
Berkshire. 6.557.



Devonshire. 13.058.



Atherton. U. S.



Lancashire. 15.833.

Accrington. M. B.



Bacup. M. B.



Altringham. U. S.



Cheshire. 12.424.

Lancashire. 38.603.



Lancashire. 23.846..

Lancashire. 23.498.

Barrow in Furness. C. B.



Lancashire. 51.712.

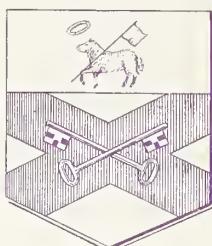
The Arms of the Boroughs & Towns of Great Britain.
Containing various points of note for the artist on the ART of BLAZON.

Manchester. C. B.

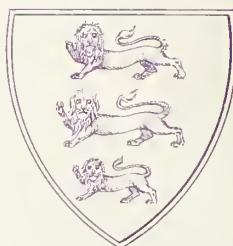


Lancashire. 505.343.

Ripon. M. B.



Alfreton. U. S.



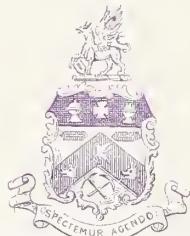
Derbyshire. 15.355.

Bishop's Castle. M. B.

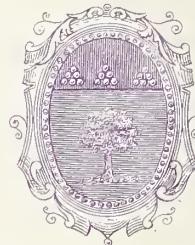


Salop. 1.586.

Barnsley. M. B.



Aldershot. U. S.



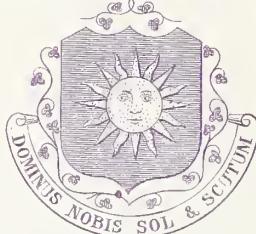
Hampshire. 25.595.

Appleby. M. B.

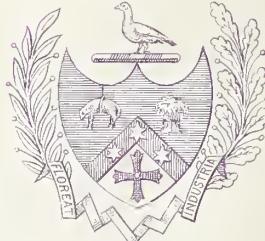


Westmoreland. 1.776.

Banbury. M. B.



Batley. M. B.



Yorkshire. 28.719.

Brentford. U. S.



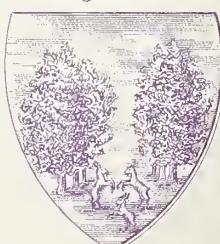
Middlesex. 13.736.

Brighton. C. B.



Sussex. 115.402.

Kidsgrove. U. S.



Staffordshire. 3.841.



BY CHARLES HARRAP.

CHAPTER XII.

TRANSFER PAPER.



SUBJECT of transfer paper seems to be an almost endless one, because the same uncertainty exists in the minds of the majority as to which recipe of coating composition is the best, as it does in the making of plate and other transfer inks. It seems more than probable that there are many recipes which give equally good results; but the whole cause of the differences of opinion arise from a clear understanding as to the objects in view in making a transfer paper. These objects may be enunciated as the principles of transfer paper, and summed up briefly in the following sections:—

1. Transfer paper is made first as a substitute for stone, and secondly as a means of conveying lithographic work from one stone to another, or to some surface other than stone for the purposes of preservation. Transfer paper is intended to be used similarly in taking transfers from engraved copper plates or steel plates, wood blocks, zinc blocks, or type. It is also intended to be used in photo-lithography to receive the photographic print which ultimately is transferred to stone or zinc.

2. Transfer paper should be of such a nature as to allow the finest work to be drawn upon it, with the ordinary drawing instruments, without such instruments cutting up the surface of the paper. Similarly, transfer paper for transferring from stone to stone, or other surfaces, should be capable of the same application in receiving the finest work without breaking such work or refusing to take any part of it.

3. Transfer paper must have a surface which can be removed with ease by special treatment, such surface being of an elastic nature, and not liable to break up, crumble, or dissolve by application of water in the act of transferring.

4. To obtain the foregoing principles the surface or coating composition must be put upon a paper that will allow moisture to pass through it somewhat readily. Or the composition itself must be of such a nature as to allow a previous application of water,

either to the stone or the transfer paper, when the paper itself will not allow water to pass through it.

5. The composition and paper used must be of such a nature as to prevent distortion of the drawing by the damping and transferring operations.

6. The composition must be so composed that a slight application of moisture will give rise to an adhesiveness in the composition of sufficient strength that when the transfer has been damped and placed upon the stone it will not move from the original position.

7. The composition must be of the nature of a gelatine size, so that it fills up the pores of the paper itself, and produces a surface upon which lithographic transfer inks will rest without becoming absorbed or without losing their greasy nature by the contact.

Dealing with these principles in their order, the first point is that transfer paper must be made of such a nature as to render it a fitting substitute for stone. Not only must it be a substitute for polished stone, but of grained stone also. To effect this, the composition must contain materials which are not readily dissolved by water, which when dry present a hard surface, and are capable of receiving a grain from any granulated surface. Thus the composition should always contain a gelatinous matter which sets in a firm layer and produces an even glassy surface; and along with this gelatinous body may be compounded a chalky matter, so as to increase the depth of the coating to allow for scraping out the surface to make alterations, or to receive the impression of any form of grain from grained stones or plates. The amount and quality of the gelatinous material used must vary according to the purposes to which it is to be applied. Thus, for the most highly finished transfer paper, prepared for lithographic writers and for mechanical work, the gelatinous matter should be a good parchment size and the composition almost wholly made from that material. For the heavier class of drawings upon transfer paper, a good glue may be used in place of the parchment, and a larger quantity of the thickening material may be added. For ordinary transferring purposes in the printing and transferring rooms, a common glue may be used along with a medium quantity of thickening material; but in any case the composition must be such that it will withstand heavy rolling to thoroughly flatten and polish its surface before use. It is a common error to prepare stone to stone transfer paper and leave it so that it dries in streaks. After it has dried these streaks still remain, and when the paper is used for fine work they break and spoil the work thus transferred. Transfer paper of all descriptions should be made so that in the final stage of its manufacture its surface is absolutely without ridges. The only transfer paper in which this is not necessary is grained paper for chalk, which, unless it is grained whilst soft, should be perfectly level before graining. For this class of transfer paper the gelatinous material must be of a good quality, whilst the thickening material must be the finest obtainable. In general remarks of this character it is impossible to deal intimately with each kind of transfer paper with any precision, and the more minute details therefore will be touched upon in due course.

The second principle laid down has to a considerable extent been dealt with in the previous remarks. It may be added here that the materials used to make a transfer paper composition should be such as will dissolve slightly on the application of warmth and moisture or moisture alone, according to the purposes for which it is intended, such materials being the gelatinous bodies known as isinglass, parchment, egg albumen, common gelatine, best and common glues, and the many forms of vegetable matter included as starches; the common glues and starches being the only ones really soluble in cold water.

The third principle of manufacture indicates that whatever composition is used, it must be put upon a paper whose surface will not become too firmly adherent. The composition must be as a stucco is to a brick house, capable of removal without actually pulling away the ground work. Thus it is better to use a sized paper than an unsized one, to prevent the gelatine of the composition becoming attached directly to the fibre of the paper and not again removable. It is also better to use a fair quantity of a thickening material in the composition, so as to adulterate its adhesiveness and form a barrier between the paper and the composition. The composition must be of an even nature. Its constituents must be well mixed, and must be evenly coated upon the paper to give a homogeneous layer not liable to come off in patches for want of containing some binding material. This third principle is difficult of full application in the making of a transfer paper, for it very greatly depends for its accomplishment upon the care exercised in the actual operation of transferring, from the initial damping to the clearing away of the paper from the transfer on the stone.

The fourth principle is partially included in the previous remarks. The paper to be used must not be highly sized for general purposes, but in making the various transfer papers upon a varnished paper, then the variation must be made in the materials used for coating the paper, to allow of considerable previous damping. Thus starch or common glue are the most convenient for making the composition upon varnished paper, and it is seldom necessary to use anything of a less soluble nature.

The fifth principle to be considered is one which has involved many serious drawbacks to the use of transfer paper. It is apparently next to impossible to meet this principle with the ordinary materials at the disposal of the transfer paper maker. In the first place, the composition used must be as thin as consistent with the work in hand, and in conformity with the other principles already laid down and discussed. The thinner the composition, the less liable is it to be flattened out by pressure and break the work upon it. As to the paper to be used, it all depends which course of treatment it will afterwards be submitted to. If the paper is to be damped before being placed on the stone, then it must be as strong as possible, such as a cartridge paper for large work. Or for small work it may be a fine bank-post. The only objection to the fine thin papers is the liability to crush the work by the contact of hard surfaces; it is better to use a thicker paper with strong fibres which will withstand

the pressure without crushing the work. If the paper is not intended to be damped before being placed on the stone, then it needs only to be a good printing paper not over-sized, and not less than 25-lb. demy. Transfer papers made upon varnished paper require the paper to be of an ordinary stamina only, as the varnished surface itself is a guarantee against much, if any, stretching. After all the precautions which can be taken by the transfer paper maker, the success of overcoming this fifth principle lies very much with the transferrer. In such cases as with grained papers, where the composition must be thick, it all depends on the damping and handling whether the transfer is distorted or not.

The sixth principle is open to accomplishment in various ways. In such papers as are first damped and then placed upon a warm stone, even the best gelatine will have become sufficiently adhesive to prevent any moving when once on the stone. It is the same with isinglass and best glue. But without previous damping and the subsequent warmth these materials alone are not adhesive, and it is necessary to add a little gummy material to all such compositions as are to be used on cold stone. The adhesiveness of the common glues and starches when moisture is applied is quite sufficient, and meets the requirements.

The seventh principle is one of very considerable importance, though it is not by any means always aimed at in making transfer papers. The best transfer papers made from the hard gelatines, such as isinglass, parchment, or gelatine, are such as will preserve upon their surfaces lithographic drawings or writings for a very considerable time. It is difficult without statistics to say how long such transfers will last. It is certain that they will endure for at least a year, if drawn with the best lithographic writing ink, probably longer. But with the commoner gelatines, glues, and starch, this power of resisting the absorption of the ink is not so perfect, and in the majority of cases, if such transfer papers be not used in the course of a day or two, it is better to have new transfers taken than to run the risk of work not going down to the stone, because its greasy nature has been destroyed by exposure and by the absorption exercised by the transfer paper composition, and the paper itself.

In thus enumerating and discussing the principles to be observed in making transfer paper, it will be at once conceded that the final working out of the details for each transfer paper composition has been made very much easier by the previous knowledge of the objects in view. Added to this is a brief description of the substances available for transfer paper compositions, and it will then be possible to treat in a short concise form all the transfer papers which may be used in lithographic processes.

* * *

CHAPTER XIII.

MATERIALS USED FOR TRANSFER PAPER COMPOSITIONS.

THE GELATINOUS BODIES.

Under the term gelatinous bodies is included such materials as parchment, isinglass, glue, and gelatine. These substances are modifications of one and the

but with two or more colours lithographed in the rainbow tint way, as a ground work, upon which the collotype key is printed, are sold for eighteenpence; and according to the size and printings they rise up to eighteen guineas and more. We have not such scenes in this country as are presented in these pictures, but there are no end of lovely and romantic views and charming scenery that, produced in such a way, or in pure collotype all through, would be quite as pretty and sell quite as well in the end. For ordinary photographs of our summer resorts, why should we be so much indebted to the foreigner. For portraits and even commercial work, there is nothing like collotype, and during the last election not a few printers were troubled about getting good likenesses of candidates done in collotype.

The possibility of the sun picking out all the blues, reds, and yellows in a picture, so that the printer can use these three primary colours and reproduce every tint of the original picture or view in a thrice-printed sheet, clears the way for coloured illustrations in books, and newspapers even, in a way scarcely yet dreamt of by the sanguine promoters of the *Million*. The system is being tried for lithographic and process work, but for fine work collotype will take first place.

There is a large field for art work reproductions in our picture galleries, public and private, and some of the owners of valuable pictures, ancient and modern, have allowed photographs to be taken of them; but with coloured collotype as the process, a new departure could be made, and the works be produced at a cost that no process hitherto has been able to touch.

Speaking of collotype reminds us of the use to which Lord Armstrong allowed it to be put, in the way of reproducing some of the fine works of art that he possesses. He allowed a local photographer to reproduce them and offer them to the public, limiting him only in the price at which they were sold, not wishing pictures for which he had given £4,000 to be as common as the cheapest print or photograph, and requiring them to be done in the best way; and so they were done by the collotype process and printed by a London company. When coloured collotype comes into use, others of our aristocracy may be willing to let their galleries be reproduced in a style that will be as near to the original as possible, and the reproduction be in some measure worthy of the painting. The example set by Lord Armstrong will no doubt be followed by others, and we may see the gems of the private picture galleries of England in possession of the people of England, in a process that retains all the touches and tones of the brush of the artist, and even the Royal Academy pictures being so reproduced, instead of in the colourless cross-hatching process of to-day—good in its way, and a great advance, but still not perfect, and we now find capable of improvement.—*B. & C. P. & S.*

TYPES are not used in printing Persian papers. The "copy" is given to an expert penman, who writes it out neatly. The various articles are then arranged in page form, and lithography multiplies the copies.

Death of Mr. Frederick Buehring.

His a well-known writer on trade matters, and an expert in lithographic art, Mr. Buehring had gained the esteem and respect of the whole trade, and his recent death will be received with feelings of deep regret. His connection with lithography dates from a very early period of his life. Born at Altona, Hamburg, in 1810, he was apprenticed to the litho trade at the age of eight years, and continued at this work until 1833. Removing to Chicago, he commenced the *American Lithographer and Printer*, afterwards removing to New York, where he continued its publication until June, 1890.

Probably the earliest book of its class issued to the trade, the "Lithographers' and Photographers' Directory," was also published by Mr. Buehring.

In another direction, his energies and technical knowledge found an outlet in improving existing litho appliances, and in the invention of others. Buehring's enlarging and reducing machine is now in use throughout the trade in the States.

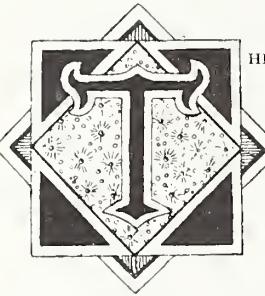
Coupled with the comparatively recent decease of Mr. Cameron, of *The Artist Printer*, American trade journalism is now deprived of the services of two of its most valued members.

METALLIC PAPER.—An engineer at Berlin, Herr Endrweit, has invented a new kind of paper, which is destined to become a great success in the stationery trade. It possesses a real metallic highly polished surface on one side, which consists of zinc, nickel, aluminium, copper, silver, etc., and is produced by precipitating these metals on especially prepared, highly polished plates of metal. A sheet of paper is made to adhere to it by a special paste. When dry, it requires only a slight touch at the side of the plate, and paper and precipitation, now forming a compound, will easily separate from it. As the precipitated metal may be of any colour, the metal paper is most attractive in appearance, and, being soft and flexible, it will take any pattern stamped on it. It may be printed on by letterpress and lithography, and thus be made use of for the finest objects of stationery, book covers, and similar work. The price of the paper is not particularly high, at least, not for fine work: a sheet of the size of about $17\frac{1}{2} \times 18$ -in. is quoted at $5\frac{1}{2}$ d. The largest size produced at present is about $39\frac{1}{2}$ -in. square.

WE should hear further about a recent patent taken out by Messrs. Berger & Wirth, Leipzig, for a paper suitable for best work in litho and art printing. The production aims at obviating the difficulty presented by surface papers, always unequally coated on the different sides, and which do not absorb ink equally. So far as is already made public, the new method consists in treating the surface of the printing paper with a bath of metal salts, which are afterwards washed out before the paper is dried. Any desired colour can be given to the paper by drying the solution, and the sizing may take place at the same time. The results are reported as very satisfactory.

Chromos. in Three Printings.

THE HELIOCHROMIC PROCESS . . . OF VOGEL AND KURTZ.



THE latest and most interesting achievement in photo-mechanical printing is undoubtedly that of heliochromic printing, or printing in natural—a better word would be fundamental—colours. Many specimens have recently been exhibited at the Society for the Diffusion of Knowledge in Natural Science, at the

Photographische Gesellschaft of Vienna, and at other societies formed for the promotion and cultivation of photographic science. The magnificent specimens of Dr. E. Albert's Raster* prints, and the excellent zincogravures in high relief by Kurtz and by Vogel, were greatly admired by all who saw them.

In the same number of the *Photographische Correspondenzen*, from which the *Photographic Times*, to whom credit for this article is due, has extracted the above statement, is found an illustrated article by O. Hruza, on the same subject, but written and arranged in a manner comprehensive to the student or to any who may eventually take to heliochromic printing as a business pursuit and a source of profit.

The numerous articles written upon the subject are usually insufficiently explicit to the tyro, or else for want of distinct evidence they are not properly understood. Mr. Hruza, however, shows us the prints from the three fundamental colour negatives, and the total reproduction of the original printed by superposing and superprinting in these three colours. The subject, a bunch of flowers fastened against a Chinese fan, is very similar to that published by William Kurtz in the *Photographische Mittheilungen*; the colours are nearly the same, but Mr. Hruza's prints are photolithographs, while those of Kurtz are Raster prints.

Comparing the specimens by Kurtz with those of Hruza we find the brilliancy of colours and truthfulness in its reproduction far more distinct in the former. Kurtz's grapes and lemons are marvellous reproductions, but Hruza's poppy flower is of an indistinct red, the digitalis is far too light and the green of the fern leaves by no means represents the colour of the American ferns. These are impressions received when looking at the finished colour prints. But what are more valuable and interesting are the prints in fundamental colours—yellow, blue, and red. Kurtz has followed strictly the precepts of Vogel, i.e., the colour of the ray-filter must be spectroscopically identical with that of the pigment. Although it is impossible to carry out this doctrine to the fullest extent, there is a great deal of truth in it, and where Hruza's productions do not quite equal those of Kurtz, the cause must be attributed either to an injudicious

printer, or to the improper selection of pigments. Joseph Albert laboured under the same difficulties, and at the same time had to content himself with the want of plates sensitive to the red rays. Otherwise his experiments were identical with the practice adopted by modern heliochromists as set forth by Cross and Ducos du Hauron.

All the latest attempts in colour printing are based upon Du Hauron's ingenious device of dissecting a multi-coloured original into the primary colours—yellow, red, and blue, knowing that, under favourable conditions, the 11,000 tints of the Florentine mosaic worker could eventually be produced by superprinting.

Modern heliochromists have invented nothing. The task was accomplished when Ducos had succeeded in making his three negatives, and so far there came an end to it.

That enormous improvements will eventually be made there is no reason to doubt, improvements both in the method of printing and in the selection of colours. It will be with this branch of photography as with the Meisenbach process, which was invented and patented over and over again, but never yielded satisfactory results until one man, Meisenbach, himself perfected the process by dint of labour and diligence.

Hruza usually works with gelatine emulsion plates, excepting for blue sensitizers when he prefers to use the wet collodion plate. The ray-filters used are glass cells filled with cochineal red and aniline yellow (1:100 for orange), for green, malachite green (1:200), and for violet, ethyl violet (1:500).

Of great importance is the uniform density of the three negatives; if they be not so, colour printing becomes more difficult, and with unsatisfactory results. With regard to three-colour printing by the ruled grating method (the Raster method), the author tells us how he prints from normal negatives interposing a Raster gelatine film, till the picture upon photolithographic transfer paper is tolerably well printed out and light portions or lines either appear with distinctness, or do not become visible at all. The image is still too feeble at that stage, but by turning the screen and by continuous printing, brilliant and vigorous proofs will result.

Our contemporary announces its willingness to show Mr. Hruza's pictures to anyone interested in the matter.

THE system of having a passenger's photograph on his season ticket has not yet been adopted by English railway companies, in spite of the advantages which recommend such an arrangement. The authorities who govern State railways have larger powers and opportunities, and the Belgian Minister of Railways, Posts and Telegraphs, has inaugurated a system of fortnightly tickets with which the holder can travel on any line in the country. Each ticket must bear the holder's photograph, and a deposit of five francs is required, which is returned when the ticket is given up. In the early days of an issue of a season ticket there is nothing to prevent its transference under ordinary circumstances, but the photograph renders such a course too dangerous to be worth risking.

* Raster is the name given to the line screen now universally adopted.

same common compound known under the generic name of gelatine, having a composition represented by the formula— $C_{75}H_{124}N_{24}O_{29}$.

Gelatine, strictly speaking, is a preparation from the actual cartilage which is an inherent part of all bones.

Isinglass of the best quality is prepared from the swimming bladder of the sturgeon. Lower qualities are prepared from other fishes' swimming bladders.

Parchment is prepared from the skins of young calves, sheep, or goats.

Glue is prepared from sinews, horns, hoofs, and harder skins. Under the general term glue are included:—

White-fish glue, which is isinglass dissolved in alcohol.

Marine glue, which consists of equal mixtures of shellac and caoutchouc in naphtha.

Isinglass glue, containing isinglass, alcohol, and chalk.

Waterproof glue, containing isinglass and skim-milk.

Of these so-called glues, none are so well adapted for coating compositions as the glue commonly used by carpenters and cabinet makers, and the others should therefore be avoided.

Pure gelatine can be obtained in sheets, or fine or coarse shreds, or chips. It is insoluble in cold water. Cold water causes it to swell, and in hot water it dissolves. The method of making a solution of these gelatines is to allow either of them to stand in a vessel, preferably earthenware, covered with cold water for some ten or twelve hours, then putting the vessel into another vessel and steadily raising the heat of the water in the outer one. Gelatine, parchment, isinglass, or glue may thus be reduced to a solution and mixed with other substances. The heat used to reduce gelatine should never reach boiling point. Isinglass, too, should not be submitted to the heat of boiling water, but requires greater heat than gelatine to reduce it to solution. Parchment requires long soaking and a high temperature to make it into a solution, whilst glue varies in the heat required by its varying degrees of hardness.

The exact consistency to which these gelatines must be reduced is such that when cool they set as a jelly. No rule can be stated as to the quantity of water to be added in either instance, owing to the variable nature of the gelatines. A little experience will soon determine the quantities in each instance.

It is quite unnecessary to enter minutely into the chemical characters of these gelatines, because it is immaterial in the making of coating compositions whether they are pure or impure. The gelatinous material must be of such a consistence as to flow into the pores of the paper and set upon the surface as a film of impenetrable matter. Bearing in mind that gelatine, isinglass, parchment, and the hardest glues are insoluble in cold water, and that cold water simply swells them and renders them the more readily soluble on the application of warmth or heat, it will be seen that any coating composition made exclusively with such materials must be first damped and then put down upon a warm stone to secure adherence. This difficulty, however, can always be overcome by mixing with such hard gelatines in the course of

making the composition, some more readily soluble adhesive material such as common glue, starch, or gum. The object in using these hard gelatines is to obtain a fine, hard surface to the transfer paper with as little composition as possible, and one that will be insoluble when brought in contact with the moisture from the ink. Such hard-surfaced transfer papers are necessary for the use of draughtsmen, whilst it would be to the interest of printers generally to use a paper with a fairly firm and fine surface in preference to a soft and over-porous one.

THE ALBUMENOUS BODIES.

The only material of a distinctly albuminous character used in various transfer paper compositions is egg albumen. Egg albumen is the same as white of egg, which latter will dry up into a light yellow gum-like substance that does not putrefy. Albuminous bodies are soluble in cold water, and egg albumen coagulates or sets in a flocculent mass at 72° C. To use the white of egg, it must be taken from the egg and separated from the yolk, then put into a bottle in which there are also a number of scraps of glass. The bottle is corked, and by violent shaking the egg albumen is cut up into a fine liquid. This liquid must be carefully filtered through cotton wool. The method of filtering is to place cotton wool loosely in the neck of a funnel or tundish, and allow the liquid albumen to pass slowly through into a bottle by means of a tube from the funnel which reaches the bottom of the bottle to prevent the formation of air bubbles.

Albumenoids consist of the five elements: carbon, hydrogen, oxygen, nitrogen, and sulphur, and may be represented by a general formula of $C H O N S$. Egg albumen when brushed over any surface gives it a glossy appearance from the fact that it sets as a varnish or size and fills up the pores of the surface on which it is painted. These properties make it a good article for the purpose of transfer-paper coatings, but its other qualities—such as the trouble of preparation, liability to froth, and low coagulating point—all tend to destroy its claim as an expedient material or more valuable material than the gelatinous. In one respect it outweighs even these latter bodies, and that is in its solubility in cold water. But even this property must be used cautiously. Should a paper be prepared with egg albumen alone it would scrape up in the pen or wash up in the brush and destroy both the quality of the transfer paper and the ink. It must therefore only be used in combination with other substances, and then only in a small proportion.

STARCHY BODIES.

Under the common designation of starch may be included almost all the root, stem, and fruit (or seed) foodstuffs. Thus, the potato contains mostly starch. Sago, tapioca, rice, arrowroot, flour, etc., are all mainly starch, whilst the succulent fruits are starch in a modified form. If the potato or any of the harder seeds be crushed and well washed in a vessel, the starch accumulates at the bottom of the vessel in curiously shaped granules. Starch in its pure form, directly extracted from vegetables, is insoluble in cold water. When it has been heated to about 165° F the granules burst and the starch

is thus reduced to an amorphous powder which is soluble in cold water and is the basis of all manufactured starch. It is for this reason that flour, when used for making coating composition for transfer paper, must be first mixed in cold water and afterwards heated, so as to burst the starch granules and make it readily soluble in cold water. Any starch body will serve for making transfer paper coating compositions, but owing to the difficulty of preparing some of them, they are passed over for the more readily prepared ones. Common laundry starch is used very largely. Flour is used to a considerable extent; and in selecting a flour, always choose the seconds quality, since it is richer in gluten than the finer flour. Arrowroot has also found favour with some photo-lithographers, and rice starch gives very good results. Whenever starchy bodies are used it must not be forgotten that they are, after preparation in the composition, readily soluble in cold water. The quantity of starch must be small, and thinly spread upon the paper. It is not to be recommended for making transfer paper which has to be drawn upon with pen or brush, for it would wash up. Its main use is for very fine papers or for varnished paper, so that it will readily take up moisture and adhere to the stone without the paper becoming saturated and distorted. When used on varnished paper it readily takes moisture and leaves the varnished paper without additional moisture being put upon the back of the paper. The starchy bodies, as with the gelatines, when thoroughly reduced to a solution will set as a jelly, and it is a solution of such strength that is generally used. The starchy bodies, therefore, set upon the face of the paper, fill up its pores and form a varnish or size, impenetrable by ordinary retransfer ink when newly used. If left for any length of time the ink begins to soak into the starch and lose its properties.

To be continued.



TO INCREASE THE SENSITIVENESS OF BITUMEN.—Included in his notes and hints useful to the photo-lithographer, Léon Vidal gives a method by which the sensibility of bitumen may be materially increased. This is obtained by dissolving from seven to ten grains of sulphur in a sufficient quantity of bisulphate of carbon and adding one hundred grains of bitumen. The sulphur of carbon is taken off by evaporation, and the residue heated for an hour at a temperature of 100°C. in a closed vessel, then exposed to the air and the heat gradually increased to about 180°C., when the sulphuretted hydrogen will be given off. This temperature should be maintained for about five hours. After being thus treated, the bitumen is formed into a brilliant black mass which is insoluble in alcohol and is only slightly affected by ether, although perfect solubility may be obtained by the use of terebine, benzine, chloroform, or bisulphate of carbon. Four parts of this preparation is then put in one hundred parts of benzine and the solution applied in the usual manner on the polished zinc plates. The result is a thin yellowish coating which possesses a relatively great sensibility to light.

Photographic Society of Great Britain.

THIRTY-EIGHTH ANNUAL EXHIBITION.



THE annual exhibition of the above society opened on September 25th with a soirée, at which the president (Captain Abney) and committee received the visitors.

Although the exhibition has no feature of special novelty, it very fairly reflects the strides which this most interesting of arts is making throughout the land. Artistic excellence and careful finish, especially in landscape representation, seem to be the standard that most of the exhibitors have aimed at, rather than mere novelty of ideas. The prizes have been awarded by competent judges, but it is somewhat difficult to judge by what methods the awards have been distributed. Of course at a show of this description, where so many good things are crowded together, it is very difficult to decide which is best, when all are good, and the awards must be given upon very narrow lines which only the most knowing amongst photographic critics are able to distinguish.

Two remarkable pictures by J. C. Burrow are worthy of special notice—both illustrate life underground, “Mong mines and miners.” Of course the subjects are not pretty, but, considering the environment of the exposures, the results are excellent. Various phases of a coal miner’s daily life are cleverly caught, and the fact that some were taken at a depth of two thousand feet below the surface adds an interest to the pictures. In this case the medal awarded by the judges is well deserved.

An enlargement by Captain Abney, “Mont Blanc by Moonlight, at 10 p.m.,” is an exceedingly interesting picture.

A series of child studies by Fred. Boissonnas, entitled “Such a Treat!” has naturally become most popular. A set of twenty-four pictures taken in fifteen minutes represent an unfettered quarter of an hour during which a young hopeful of two years enjoys a plentiful supply of blancmange. The process, which shows a new development in each picture, finally shews an utter demolition of the blancmange and its reckless distribution over the beaming face of the youngster. Altogether the story is most amusing, and is, in addition, technically perfect.

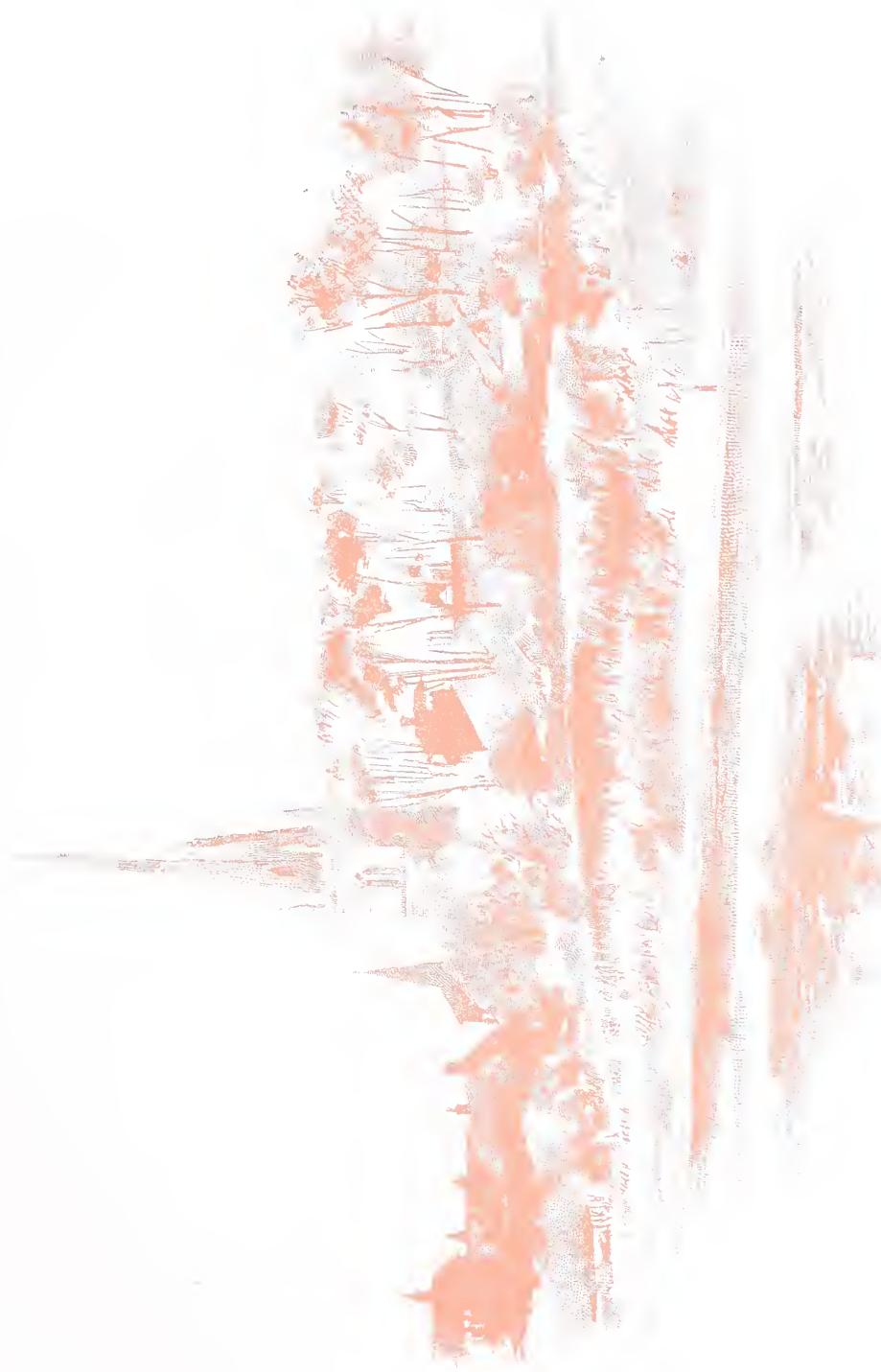
The exhibition is made complete with a very fair show of optical lanterns, slides, and general photographic apparatus, and, as a whole, compares favourably with former shows of this popular society.

ZINC PLATES COATED WITH CARBONATE OF CHALK.

—M. O. Muller, Leipzig, uses a coating of carbonate of chalk applied to the thickness of about a third of an inch on the surface of zinc plates. Thus the surface would be equally as well adapted for the engraving tool as for the transfer of ordinary pen designs. This idea is mentioned as suggesting various applications of a similar character, not because there is any doubt of the superior value of bichromated gelatine as compared with a layer of carbonate of chalk, but as a suggestion worthy of recognition.

Printed with Mander Brothers' Lithographic Inks.
On Smith & MacLaurin's Celebrated Chromo Paper.

Works - Wolverhampton.
Johnstone, Scotland.



Colour No 6. Light Red.

Specimen of Chromo Lithography in 11 printings, drawn direct and printed at
machine from plates Manufactured by the Patent Lithographic Zinc Plate Co Ltd Hall

Printed with Mander Brothers' Lithographic Inks.
On Smith & Mc Laurin's Celebrated Chromo Paper.

Works - Wolverhampton.
Johnstone, Scotland.



Colour No 7. Light Grey.

Specimen of Chromo Lithography in 11 printers, drawn direct and printed at
Plates Manufactured by the Patent Lithographic Zinc Plate Co. Ltd. Hall
Machine from plates

DE MOLYNEUX PRESS LTD.

French Chalk.



MONG the many materials which are used for industrial purposes, talc or French chalk takes a prominent place. To avoid confusion the term "talc" is preferable. Though this mineral is plentiful in many countries, it can only be made commercially useful if it is pure and uniform. It is more often mixed with other substances than found in a pure state, and this is the reason why the number of good talc mines is very limited. The chemical analysis of a good quality shows that it consists of about two-thirds silica and one-third of magnesia. Inferior qualities often contain besides a larger or smaller percentage of lime and of peroxide of iron. However, the quantity of these additions varies and cannot be definitely stated even in one and the same district, unless a chemical analysis takes place in each case. The best known talc mines are in France and Italy, and keep up a large export trade. There are also very good mines in Austria, Germany, Scandinavia, and elsewhere.

The stone is first obtained in the way usual in mines, by shafts being run into the ground to bring up the large pieces which are hewn out by the miners. Where the rocks are at the surface they are often worked from the top, like gravel pits. The talc obtained in either way is first sorted and then subjected to a crushing process, after which the finely ground mineral is pressed through a series of sifters. A chemical examination shows whether there is any iron in it, and in that case powerful electro-magnets are called into requisition for extracting this iron. The best and purest quality shows a snow-white shade, and being extremely soft has been ground to an exceedingly fine powder. Inferior sorts would neither be so white nor so soft and fine—on the contrary, they are often more or less gritty. The best Italian mines, whose products are shipped from the port of Genoa, stand at present unrivalled in this respect, though some of the French are generally found good enough for most purposes, the more so as they are cheaper.

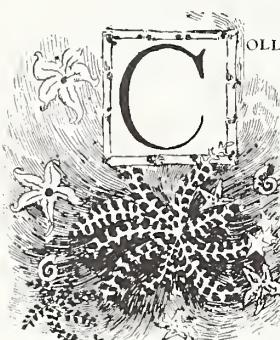
The action of talc is to make the articles in the manufacture of which it is employed smoother, softer, and whiter, and impart a brilliant and often transparent surface. It is largely consumed by perfumers, druggists, starch, soap, indiarubber, and colour makers, dyers, bleachers, polishers, leather dressers, and many other trades. In the paper trade it is employed in the manufacture of better-class papers instead of China clay. It is thought indispensable where a superior glaze and an extra brilliant colour of the surface is required, particularly in the white sorts. It is finer and whiter than China clay, and so long as its higher price, as compared with China clay, is not an obstacle, its use is highly appreciated by all who have taken the trouble of giving it a fair trial. In order to keep it well in the paper, it is mostly mixed with farina or starch made from

potatoes. It is first moistened with water in a special vessel at a temperature of 190° to 212° F and five per cent. starch is added, but as the latter loses its efficiency if made too moist, careful papermakers do not allow more than one or one and a half gallons of water to go to the pound of starch. The hundred-weight of talc would thus be treated with eight and a half gallons of water or less, but never more. It is generally considered best to add the talc to the paper pulp before the sizing takes place, but opinions differ on this point. From this it can be seen that the talc takes less the place of a filling than of a chemical. Where extra weight or extra opaqueness is desired, other substances would have to be used in conjunction with the talc. In fact, the latter, when used alone, is likely to make the paper more transparent than most purposes would require. In surface papers its employment is even more general than in printing, writing, or long elephant papers. Many makers even go so far as to consider it impossible to produce superior surface papers without the help of talc, because, among other advantages, the elasticity received from it allows a greater pressure and higher glaze to be given to the paper than would be possible otherwise.—*Geyer's Stationer.*

ACCORDING to *La Fonderie*, a recently discovered method of making paper adhere to metal is so successful that after application it is next to impossible to remove the smallest portion of the paper without entirely destroying it. The invention is particularly adapted for the purpose of fitting metal plates at the back of lithographs, engravings, and designs of various kinds, additional value being given to it by the fact that atmospheric conditions cannot affect it. Experiments have proved that all acids possess the properties necessary for this purpose, though varying in degree, but the best agent is hydrochloric acid mixed with an equal quantity of water to which has been added a little oxide of zinc, added immediately after the effervescent action has taken place. The plate of metal is coated with this compound, and after being dried carefully is covered with fine coach varnish. So prepared, the plate is placed in a drying oven with a temperature of about 30° C for, say, twenty minutes—by this time the varnish will have almost entirely lost its adhesive power. Carefully place the sheet of paper intended for use on the prepared surface and submit it to strong pressure. The result will be adhesion of the most perfect kind. The method may be applied with advantage to mounting collotype blocks by a pellicular process.

ORIGIN OF MEASUREMENTS.—The "foot" is named from the length of that member in a full-grown man. Some say that it was so called from the length of the foot of a certain English king, but it is believed to have been a standard of measurement among the ancient Egyptians. The cubit is from the Latin cubitus, an elbow, and is the distance from the elbow to the end of the middle finger. Fathom is from the Aryan fat, to extend, and denotes this distance from tip to tip of the fingers when the arms of an average-sized man are fully extended.

Chromo-Collotype.



COLLOTYPE printing in England is a comparatively new departure, at least for general work, but it is likely to be in its various phases a growing business, and one which all concerns that are up to the mark in fine art work will have to touch, and the general printer will find it necessary to be not far behind the art printer; for collotype, which has been printed on all kinds of machines, will be found useful

in all kinds of work. This most delicate and beautiful method of art production—light printing, as the Germans call it—has not had a fair chance in England, because of the machines used not being built for the work; but now, when it is being better known, and with suitable machinery, it may be successfully and satisfactorily pursued.

The foreigners have been quite in advance of us in this matter, and are still keeping well to the front; but they have not much the start of the British printer in the latest development of the collotype system—coloured collotypes—and that will be a revolutionary system in more ways than one. Collotype has hitherto been considered chiefly as a monotone process, capable of giving most delicate half-tones in the single colour used; but now it is coming to the front in coloured work, and the sun is doing not only the "key," but also the coloured blocks for printing, and the three primary colours doing the work of no end of tones and printings in the plotting out of methods of chromo-lithography.

Chromo-photography—not the printing of all the colours of the rainbow, on one sun-printed picture; but any possible mixture of such colours from three printings from collotype photographs—is likely to be the development of the future in colour work, and other nations are going into the matter with some spirit. Russia, which had a great deal to do with the development of the electric light for street lighting, is apparently not going to be behind in collotype, and in the State printing department experiments are being carried out in coloured collotype with great success by Mr. Weissenberger of the Imperial State paper office. When will the English government do anything in an industrial way like Austria or Russia? The process is described in a photographic journal, and a portion of the article has been translated and published in *Photographic Work*, an English journal of considerable merit.

It was with the samples of the work more than with the method, for the moment, I was concerned, when the other day I had the opportunity of seeing some samples of these Russian experiments, and certainly most surprising results were got out of three printings. There were three samples, and they were representative of three classes of work, that practically covers

the most of coloured work. There was a snow scene, a street scene, and a portrait. The snow scene showed what could be done in light and delicate work; the street scene, beautiful gradations of shade and colour; and the portrait, what could be done in strong colours in the garments, along with tones as soft and as gently graded as the face of a lady requires. With each of the specimens was an impression, too, from each of the colour plates, used before being printed over each other, and the marvel was how such a variety of tone could be produced out of apparently such crude elements, and by only three colours and three printings. With the snow scene was sent a reproduction of the same view in chromo-lithography, with nine printings, and the collotype, with its three printings, bore the palm for detail and delicacy and variety of tint and tone.

The street scene was from a water colour, there could be no doubt of that. This was seen especially in the sky, and it was difficult to believe that the brush had not done the work rather than the roller, and it showed how admirably the system of reproduction is suited for colour work, and we may hope to see the works of our best artists reproduced with every touch of the brush and every atom of colour they have used, or left on the surface at least, in a manner that would make it difficult to distinguish the copy from the original, and at a price that will put the finer classes of chromo-lithography in the shade. These Russian specimens show what can be done, and fortunately the producer of them tells the world how to do it.

The portrait was remarkable for the depth and brilliancy of the colour. By the blending of three comparatively light colours, almost black was produced, and in strong patches; while the yellow gave a brilliancy to the carmine of the garments of the lady that the primary colour did not possess. This portrait proves that delicacy of tone and depth of colour can be got out of three printings of apparently feeble colours, if the sun be allowed to plot the colours on the film of gelatine on the glass from which the collotype is printed. When three printings can do the work of twenty-three printings, and with a variety of colour, a delicacy of touch and truthfulness that is as much beyond the work of the stone artist as photography is finer than the most perfect-looking pencil or brush work—then we may rest assured that we are on the eve of new developments in colour work, and that it is a system that no firm can overlook that has any regard for its reputation as to being up to the times. It is to be hoped that these samples will be placed somewhere so that the two professions—the photographers and the printers, to say nothing of their employers, the publishers—may have the privilege of seeing the last new thing in collotype and colour printing, in which those barbarians, the Russians, under their tyrannical but evidently paternal government, are leading the way.

There is plenty for the English printers to do in plain and coloured collotypy. There are views, such as those brightly-coloured scenes from Kirtzeland, out of which the foreign printers must be making a pretty penny. Plates, with sometimes one printing,

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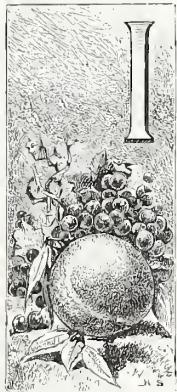
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What is Colour?

CHAPTER XI.

SUCCESSION AND MIXED CONTRASTS.



In the chapters just completed, the main point has been to deal with the simultaneous contrast of colours—the contrast of colours occurring in a picture or in ornament close to one another, and having an immediate and direct effect upon the ultimate result of colour vision. Simultaneous contrast, therefore, is quite distinct from successive contrast. The former cannot be entirely explained by fatigue of colour perception, but to the activity of colour perception. Successive contrast, on the other hand, is to a great extent due to the fatigue of the colour vision. Thus, as already described, if a number of pieces or surfaces of any one colour be viewed in succession, the first may appear bright or pure, whilst the later ones lose their purity by contamination with the complementary of the original colour. If a series of green surfaces of equal intensity be viewed, the later ones appear browner, from the virtual acquisition of red produced by fatigue of colour perception. If, after viewing each green surface, the eyes are turned upon a red surface, then the fatigue is neutralised, and all the green surfaces can be viewed without any of them losing their purity. Such a course of procedure is only applicable to experimental work, or in purchasing materials in shops. In viewing pictures or ornamental work this cannot be done, and the successive contrast ensues without any power on the observer's part of preventing it. Such being the case, it is very easy to misjudge the quality of colouring by fatiguing the eyesight too much. To obtain the true colour composition of any subject it should be viewed in a good light, without any adjacent colouring likely to cause simultaneous contrasts, and the subject should not be gazed upon for too long a period, or a series of reactions will take place, giving the colouring an altered aspect caused by the excitement of a number of complementary colour sensations.

Such a careful method of examination is not generally possible, therefore it is as well to be prepared for the probable successive contrasts which will be set up, and judge the work accordingly. An interesting experiment which can be performed readily by anyone, proves at once the value which must be attached to a clear understanding of successive contrast. Take any bright self-coloured surface—blue, red, green, etc.—and upon it place a patch of black or grey paper. Gaze steadily upon this combination, and after a short interval withdraw the black or grey patch and continue to gaze upon the whole surface of colour. That portion originally under the patch will appear much brighter than the remainder. The explanation is very easy. For whilst one portion of

the retina is being fatigued by gazing on a brightly-coloured surface, and gradually losing its power of colour perception by the excitement of the complementary colour sensation, the portion of the retina opposed to the black or grey patch is in repose and quite prepared to observe any coloured surface in its full colour value. This, or a similar, successive contrast is taking place during the whole time that any individual is devoting his whole attention to the examination of coloured surfaces. A series of experiments can be also performed by gazing upon a coloured surface with one eye only, the other being closed. After a while the coloured surface becomes duller, and it is apparent that the eye has become fatigued whilst the complementary colour sensation has been set up. At this moment turn the eye upon a totally different coloured surface, and the latter will become tinged with the complementary colour sensation existing in the open eye. To prove that this is the case, close the eye which has been conducting the experiment so far, and open the other eye. The latter will observe the coloured surface last presented in its true light, so far as it is able. But, even here, the natural sympathy of the human nervous system must be taken into account, as causing some slight deviation from the natural colour sensation of the surface.

Such an experiment is an experiment only, and can only be referred to as proof that successive contrast occurs. So, too, many of the curious experiments which have been carried out possess little or no real value beyond proof of certain hypotheses. Thus, in observations on the effect of closing one eye and using the other, it can be shewn that if the left eye be used to gaze steadily upon red, it will become dimmed by the virtual presence of green, and if turned to gaze upon yellow will see that yellow with a greenish cast. At this point the right eye should be opened, and it is very probable that most people with normal vision will see the yellow tinged rather with red than green by the right eye. The colour first viewed has set up a sympathy in the closed eye, which, when opened, has a tendency to see objects as if they were tinged with that colour. Similarly, if the left eye gaze upon yellow, then upon red, the red will appear violet by the excitement of blue, and if the right eye be opened to gaze on the red it will appear more orange. It is useless to wade through a long table of such effects, as they can be drawn up by anyone in a few minutes. And further, as they are experiments all intended to prove the same thing, it would be useless to recount them rather than deal with more practical issues. For the sake of definition these latter contrasts, being a combination of successive contrast followed by viewing another colour, are termed "mixed contrasts."

In mixed contrasts the colour vision is affected very considerably by the depth of tone and power of the colours under examination. In viewing orange the eye becomes so imbued with a yellow tone that when the eye is turned upon a dark blue the yellow impression is so much more predominant than the complementary of orange that it assists this complementary in making the dark blue appear greenish rather than violet. If, however, a light blue be substituted for

the dark blue, then the violet effect is apparent. In a similar way, after viewing a quantity of yellow material the eye tinges everything with greenish-blue, and in looking upon orange, orange-red, or scarlet, the latter appear dull in comparison. These experiments tend to shew that brightness of colouring greatly affects the persistence of contrast effects. For instance, the effects of viewing violet and yellow in succession are stronger than the effects produced by viewing orange and blue, whilst the effect of red and green contrast is but feeble and soon passes off.

The only remaining form of contrast not already dealt with is the contrast of tone. Such contrast refers only to the question of brightness, regardless of colour. This can be readily demonstrated by using four strips of self-coloured paper, two being one colour and two another. Place the strips side by side, two strips one colour on one side, and the other two strips the other side. Then draw the two strips a little distance away from each end, leaving the other two strips close together between them. If the strips of one colour be called A and A', and the strips of the other colour called B and B', then the two strips A and B at opposite ends will be separated, whilst the strips A' and B' will be close to each other. The experiment becomes apparent at once to anyone who is performing it as soon as the four strips are viewed after being separated. For if the two strips A and A' differ in brightness from B and B', then the strips A' and B' close together will apparently differ very much more in brightness than A and B; there will be a contrast in tone between A' and B', whilst A will appear darker than A' and B will appear darker than B'. The best form in which this demonstration can be made is by using grey strips of different tone, or strips of paper with close and open machine-ruled lines upon them. Again, if a series of such strips, each a shade deeper than another, be placed side by side in series, the lightest at one end and the darkest at the other, then the juxtaposition of such strips sets up a succession of contrasts of tone which causes the series of strips to appear curved like channels against one another, by the apparent darkening of one side and lightening of the other side by contrast of tone.

Contrasts of tone must always occur in juxtaposition of different colours, of colours of the same name, as well as with greys, and allowance must always be made for such contrasts. If scarlet be opposed to dark blue the scarlet appears much brighter than when it is opposed to a bright yellow, although it may be the same identical strip of colour.

By giving careful attention to the simultaneous and mixed contrasts and the contrasts of tone in working out designs or pictures, an artist can obtain a greater variety and greater brilliance than by overlooking these principles of colour sensation. In printing from drawings of such designs, the printer should be able to gauge the effect of contrast which in all probability is lending a certain colouration that cannot be secured by any single printing. Such effects must also receive full consideration in printing each separate colour, and a due allowance made for variety of colouration which is not inherent in the colour itself, but due entirely to one or other of the forms of contrast.

Contrasts of such character appear frequently in nature. Thus when shadows are cast by daylight and by candle-light, the shadows falling near one another will shew a certain amount of colour in them, due to the excitement of the complementary blue of the yellow candle flame. Again, daylight entering a room illuminated with candle-light will be tinged with blue, the complementary of the yellow light. When two bright colours are brought into contact, there is not only a simultaneous contrast set up, but a peculiar and almost indescribable shimmering or overlapping takes place. In a recently published advertisement of Messrs. Manders' inks, there was a direct contact of red and blue worked in crescents, which presented this vibrating sensation, and made the plate unusually attractive. A similar effect can be obtained by alternating yellow and blue in stripes. Sometimes they will be seen as if combined to form a green, at other times apparently quite separate.

[To be continued.]



PREPARATION OF A TRANSFER PAPER FOR PHOTO-LITHOGRAPHY.—Take some slightly sized paper, and leave it to float for about three minutes on the surface of a solution at a temperature of 35°C., composed as follows :—

Ordinary water	.. .. .. ..	1,000 c.c.
Gelatine	.. .. .. ..	150 gr.
Very fresh paste	.. .. .. ..	25 "
Bichromate of potash	.. .. .. ..	14 "

Precautions should be taken that no air bubbles are formed between the surface of the liquid and that of the paper. Lift carefully from the bath, taking hold of the two corners on the same side, and put on a plate to dry, which should be completed in about two hours at a temperature of 20°C. This operation should take place in a dark room by the light only of yellow glass. When the paper is dry it is exposed to sunlight direct, or spread on a positive or negative plate, according to the result desired. The proof is developed and plunged into a vessel of ordinary water, in which the yellow colouring, due to the bichromate of potash, has entirely disappeared. This done, take the sheet and spread on a smooth surface—wood, stone, or glass—and ink over with a soft roller. When all the fineness of the original has been obtained, it may be transferred to zinc or stone according to taste.

An authority mentions the following as the twelve greatest paintings in the world :—Raphael's "Transfiguration," now in the Vatican; Raphael's "Sistine Madonna," now at Dresden; Michael Angelo's "Last Judgment," now in the Sistine Chapel at Rome; De Vinci's "Last Supper," now at Milan; Domenichino's "Last Communion of St. Jerome"; Rubens' "Descent from the Cross"; Guido's "Aurora"; Guido's "Beatrice"; Titian's "Assumption"; Correggio's "La Notte"; and Murillo's "Immaculate Conception." The biblical sources of the majority of these will be noticed, and it is a remarkable fact that a very large proportion of the great paintings of the world take their characters and inspiration from the Bible.

Photo-Mechanical Colour Printing.



LETTERS PATENT have just been received by W. Kurtz for an improved method of producing prints in three colours by heliochromic printing, some comments on whose process appear elsewhere in this issue.

In printing chromos or coloured prints on the lithographic, type, "lichtdruck," gelatine, photogravure, or any other press, either from half-tone plates or from transfers

Fig. 1.

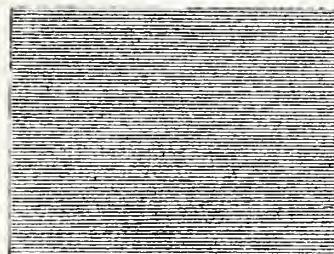


Fig. 2.

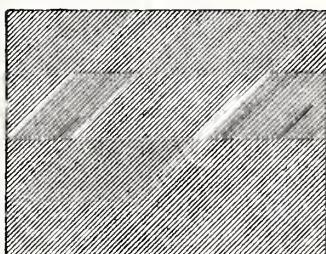


Fig. 3.

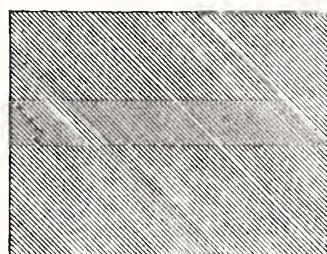


Fig. 4.

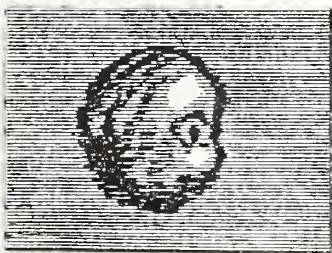


Fig. 5.

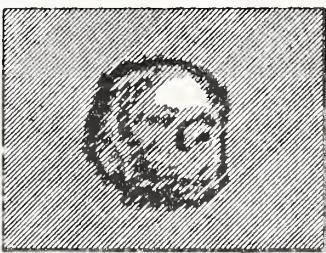
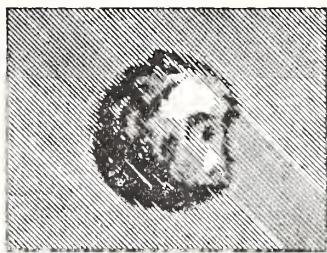


Fig. 6.



on stone, which have been produced by the half-tone photo-engraving process or by similar methods, the prints show, in spite of the most perfect register, a so-called "moiré effect," a defect which may appear only in a few portions of the picture or recur regularly all over the picture in the form of a pattern resembling watered silk, thus rendering it entirely worthless. This confusion of lines is due to the fact that the colours are printed one over the other while they should really be arranged sidewise of each other on the paper, or cross each other in such a way as to make confusion impossible. To avoid the defect, instead of making a half-tone negative of the yellow colour, another of the red colour, and half-tone negatives for every other colour that is to be used, all of which negatives would be produced by the screen or net in crossed lines, dots or stippled lines, Mr. Kurtz makes his negatives in single

lines by interposing in lieu of the screen or net, a glass plate ruled with parallel lines running in one direction only, so that the negatives show only one half of the picture or colour to be reproduced, instead of the more fully modelled negatives in use heretofore.

His invention consists, therefore, in a process of photo-mechanical printing, in which half-tone negatives are produced by exposing each plate with a screen with parallel lines running in one direction only, the lines of one negative running in a different direction from the lines of the other negatives, and then printing in colours from these half-tone negatives, so that the lines of the different plates will intersect each other in different directions.

In the illustrations, the process is shown by six figures, in which figs. 1, 2, and 3 represent three

different screens, provided with lines running in different directions from each other, and figs. 4, 5, and 6 represent the effect of the printing in different colours from the colour plates made from the half-tone negatives.

In carrying out the invention a sensitised plate is subjected to a single exposure through a screen, provided with parallel lines running in one direction only. The second plate is subjected to a single exposure through a screen, the parallel lines of which run in a different direction to the lines of the first screen. The remaining plates are likewise exposed in the same manner through screens, the parallel lines of which run in directions differing from the first two screens. When a picture is to be printed, for instance, in three colours, the colour plates are made from the half-tone negatives which are obtained by single exposures by the interpositions of the screens,

shown in figs. 1, 2, and 3, so that a picture representing one colour is obtained in which the stripes run in one direction, say horizontally, as shown in fig. 4, while the pictures obtained by the remaining colour plates are produced in stripes that run diagonally to the lines of the first plate and in opposite directions to each other, as shown in figs. 5 and 6. The printing plates are produced from the half-tone negatives by the photo-etching process, in the well-known manner, so that when the colours are printed one over the other in coloured printing inks, a picture is obtained in which the light and shade of the original are fully shown, although each colour has been photographed for only one-half of its area, the remaining half being taken up by the lines. The "moiré" pattern or similar defects are thereby entirely obviated, as the colour stripes intersect each other and reproduce the original picture in a more complete and artistic manner. One of the colours may be printed from a grained plate and the picture then be completed by printing the other colours over the colour produced by the grained plate from printing plates, the lines of which cross each other at right angles. When the picture is to be printed in four colours, a fourth printing plate is used, the lines of which intersect the lines of the first plate at right angles, while the second and third plates produce intersecting lines in diagonal direction to the first and fourth. Thus, confusion of colour is obviated.—*Paper and Press.*



COLLOTYPE SIMPLIFIED.—A suggestion on this subject by the editor of a Russian photographers' journal is somewhat different to others recently propounded. A plate is prepared as usual with bichromate of potash, exposed under a negative, developed in cold water, and left to dry for twenty-four hours at a temperature of 30°C.; then covered with the following solution:—

Water	335 c.c.
Glycerine	665 "
Hyposulphite of soda	6 gr. 5.

This should be left to act on the plate for one or two hours, according to the amount of relief desired, then treated with a soft sponge and blotting paper before applying ink with the gelatine roller. For impressions at the ordinary press, the inked plate is placed on a sheet of caoutchouc, with a mask of paraffin paper and the paper to receive the impression; a pad of fine muslin wadded and closed up in silk should be used, as this allows the closest contact between the plate and paper, thus including all the details of the negative. If after a score of proofs have been taken the whites tend to become grey, the solution should be again applied with a soft sponge, and the plate will re-appear in its former clearness.

At the printing office of Baudié & Concaret, at Bordeaux, a lithographic machine, intended for printing posters of exceptional size, has been put up. It takes in stones measuring 72-in. by 48-in. The machine, built by Voirin, of Paris, is likewise adapted for colour work, and for printing from zinc plates. Its price is £950.

The Geneva Exhibition of Photography and Photo Processes.



HE International Exhibition of Photography recently held at Geneva has proved very interesting and has been extensively patronised. The considerable number of exhibitors, and the care displayed in the specimens shewn, denote a marked progress in the growth of photography. We give below a resumé of those which concern the illustrative processes based on photography.

If the number of exhibiting photographers is gratifying, it is regrettable to note that the photo-mechanical processes were poorly represented; only a few firms responding to the call of the committee.

Taking first the four cards sent by the Kais. russ. Expedition fertigung von Straatspapieren, of St. Petersburg, these form the first attempts at illustration based on the impression of the three principal colours of the spectrum, red, yellow, and blue. The specimens exhibited were very remarkable from every point of view; in our opinion a great difficulty has been surmounted, and its application, when rendered more practicable, will open a new field of activity to processes having a photographic basis.

By the use of the "three-colour system," this establishment has obtained plates which, executed in chromolithography, would have necessitated twelve to fifteen separate impressions. The method used is that of phototype, and it gives fineness and half-tones most difficult to obtain otherwise; its disadvantage as such lies in the fact that for current illustrations this process must be printed separate from the text.

Vogel and Kurtz have lately obtained identical results by using autotype blocks and letterpress working.

Obernetter's, of Munich, had an ideal exhibit, which, minutely examined, gave a good idea of the scope of their establishment. In showing several subjects which prove very effective, M. Obernetter has solved many difficulties which have previously confronted workers, as, for instance, a number of enlargements in photogravure. His exhibits were composed of ordinary phototypes, of phototypes in colour, and of photogravures; in these three applications M. Obernetter shows himself a past master in surmounting obstacles.

The catalogue announces that the firm of Brunner and Hausen show autotypes and phototypes, but only phototypes were exhibited. These were good, but did not shew the same triumph over difficulties as is exhibited in the work of Obernetter.

Messrs. F. Thevoz & Co., Geneva, shewed five panels grouping the principal processes of photo-mechanical productions. Some of the specimens were of special interest, and others merely shewed the special processes used in this establishment. Their phototype impressions in imitation of platinotype or crayon are of remarkable fineness. Altogether it is evident that this house sought less to produce effect than to show visitors careful and varied subjects and treatment, while the great diversity of subjects exhibited has been quickly appreciated by connoisseurs.

MORGAN & KIDD.



MEDALS



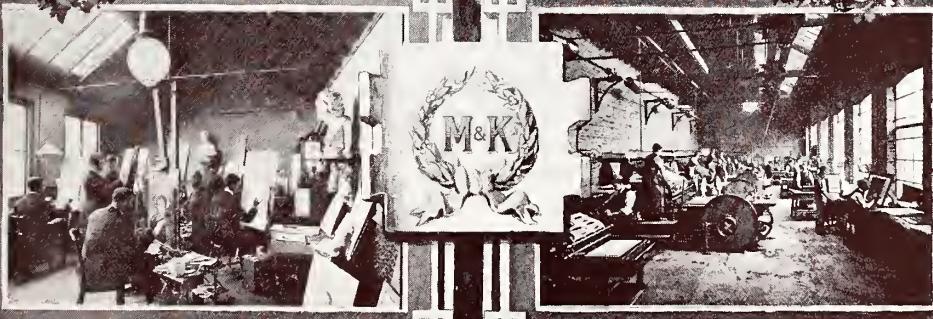
ARTISTS.
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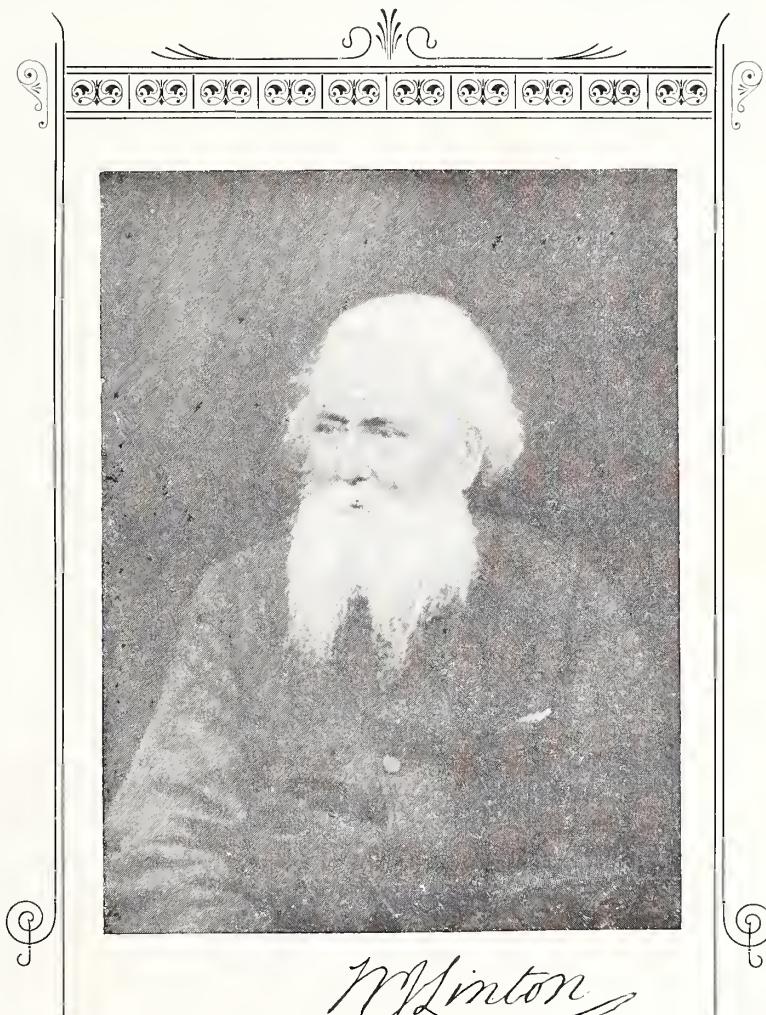
BY MORGAN & KIDD.

Wood Engraving.

LN REVIEWING Mr. Linton's book, "The Masters of Wood Engraving," in the *Art Journal* for October, the reviewer makes the following interesting remarks about art "criticism":—"This book contains a strenuous vein of protest against amateurism in art at large, especially that sort which affects 'criticism' proper, and disregards, or pretends to disregard, the technical experience and learning of experts, including all that artists claim as their exclusive province. So stringent are these protests and so reasonable do they appear, that we propose to consider them as briefly as may be before studying the book in those other respects with which they are very closely bound up. It is the more desirable to do this because it is seldom an expert so distinguished as Mr. Linton descends into the lists against untechnical persons, and is not himself so lost in technics that his voice resembles that of one crying in the wilderness, where no man listens and few men understand. The point in question is an old and highly important one, which some day will be debated à outrance, because though few have been bidden, art criticism has become a calling, and the indignation of artists and other qualified persons is rising high against the floods of quackery which the annual exhibitions call forth from the lads and young ladies who, putting on the mantle of Hazlitt, swarm at private views, and, like the Paris of Cénone, 'judge of gods.' The lucubrations of these persons are the extremes of that amateurism to which Mr. Linton refers, and they are outcomings of the same insincere and vain spirit of our time which depends upon inner consciousness alone."

The reviewer then goes on to give some examples of those who, rushing out for wool, have gone back shorn:—"How gross and frequent is this sort of insincerity will appear to those who know how an enterprising 'art critic' once attacked a well-known publisher of prints because he had issued photogravures 'with a plate-mark,' as if this were fraud intended to deceive the public into buying the impressions as engravings proper, and therefore of greater commercial value than photogravures. It was, to the delight of the artists, manifest that the writer did not know that photogravure of all

sorts must needs be printed from plates, and therefore could not be had without plate-marks. It will also be remembered that Mr. Whistler showed small mercy to the 'eminent critic' who described his famous lithographs as photogravures. A well-known writer on the histories of prints proved within our own knowledge so completely ignorant of the various processes of engraving that, to convince him of the true nature of a cut, it was necessary to show him the back of the paper ere he could be convinced that the impressions



had been made by a block which printed from a relief, and not from a plate which printed from lines that were incised and filled with ink."

ONE of the most important points in the manufacture of printing inks is fineness; very often a little extra grinding will increase the value of a printing ink to a very great extent, as the finer it is ground the more covering power and body it will possess.

Paper for Making Transfer Pictures.



AN IMPROVEMENT in paper for making transfer pictures consists in applying to the transfer paper a coating soluble in water, and a second coating of a material insoluble in water, which serves to carry the impression of the design, and which after removal of the paper is applied with the impression uppermost to the object to be decorated, upon which it is then pressed by means of a soft brush. After drying, this skin adheres perfectly to the decorated object and the design can be burned in if the colours are of a vitreous nature.

The design is first printed or formed on the soluble coating, and when the insoluble coating is applied it receives the impression thereof on its inner face, which when the outer face is pressed upon the surface to be ornamented, and the paper and soluble coating is removed, becomes the uppermost or exposed face of the insoluble coating containing the design and presenting the same to the eye. This insoluble design carrying layer consists of a mixture of turpentine and a drying oil, which, according to the state of the atmosphere is mixed with from twenty to twelve times the quantity of a two per cent. collodion. The turpentine and drying oil are generally used in equal quantities; the proportions have, however, to be varied somewhat, according to the nature of the printing. Collodion alone, or only mixed with glycerine, for rendering it more supple, can only be used as the design carrier (as is done with the photo-ceramic dusted designs) when the skin has been freshly prepared, because it is very fragile and difficult to manipulate. In addition, the skin is very apt to split off on drying and burning. The use of collodion has the special disadvantage that it falls to pieces after a short time, and that a design printed thereon can then no longer be transferred. The addition of drying oil renders the skin more supple, tougher, and more dense, and enables it to last a very long time, so that the impressions can be kept for a long time. The addition of turpentine renders the skin more adhesive, so that it adheres very firmly to the object to be decorated. Its particular advantage is that in partially evaporating in burning in the design it renders the skin porous to a certain extent, so that it is not raised off the object by the pressure of the vapours that may be generated beneath it, and lastly, it melts together on to the object with the residue of the turpentine. The transfer design may also be prepared according to this invention in such manner that the design is first printed on the coating soluble in water, and after the impression is dry the mixture of turpentine, drying oil, and collodion is applied thereto. If the transfer designs are applied to porous objects they are apt to split off. In order to prevent this the parts of the object to be decorated are first coated with a material which removes the porosity.

For this purpose tragacanth mucilage, starch paste, turpentine dissolved in turpentine oil, resin solution, or other suitable material may be employed. This is patented.

To Render Paper Transparent.

MANY attempts have been made to do this easily and cheaply. Experiments with vaseline have proved unsatisfactory, and while castor oil is productive of good results, it cannot be generally utilised. Butter appears to be a convenient and satisfactory means to this end. In using this cover the paper with it, and rub gently in with the fingers, slightly heating when necessary and moving the oil about so as to make each portion equally impregnated. When all seems satisfactorily treated, warm the surface and take off the excess of oil with clean cotton, heating over and over again as required. Then rub gently with cotton soaked with alcohol, after which it is ready for printing, and will possess a fine, soft, glossy appearance.

Professor Burton recommends the following method: A mixture of one part viscous paraffin with three or four parts vaseline is put thickly on the back of a paper negative, the other side being exposed to the steam from a kettle at a distance of six or seven inches. Almost immediately the parts subject to the action of the steam become white, which can be taken as an indication that the paper has been thoroughly penetrated, and when cold will be transparent. The action of the steam preserves the limpidity of the paper and prevents any curling up, especially as but a short time is taken up in the process. Care must be taken that the steam does not condense on the surface of gelatine, or it will dissolve it. Clichés on albumenised paper run no risk of this danger.

A Method of Engraving Stone Deeply.

THIS process will be found useful when it is desired to deeply etch litho stone so as to obtain the smallest details of some special work. The stone is inked and etched as ordinarily, after which it is washed and made perfectly dry. Then powder over with resin or powdered bitumen, any excess of the powder being removed by a soft brush; a sheet of glazed paper is placed on the stone and the whole put under pressure for a moment. This done, the stone is made perfectly level and flooded with alcohol, which is then set on fire, being careful to avoid any current of air which might affect the regularity of combustion. The action of combustion causes the fatty ink and the resin to unite, just as we get a union of these two substances on the surface of a zinc plate by heating from the back in preparation for engraving. When the stone is again cold, it may be again etched if required to bring the work still more into relief. To etch stones thus prepared, dilute phosphoric acid and gum containing a little nitric acid is recommended, and in working use ink mixed with a solution of bitumen in terebine.

Artists and Illustrations.



ONE of the most characteristic, and at the same time most fortunate, results accompanying the new methods of reproduction by photomechanical means, is the approach of the era of the illustrative artist; and by that we understand the artist who makes and designs a subject to-day and has the satisfaction of seeing it reproduced faithfully, not only in its lines and formation, but also in its true spirit and effect.

To-day, illustrations are scarcely a speciality confined exclusively to the talent, inspiration, and handiwork of the engraver. In consequence, modern processes of illustration based on photo reproductions, in transforming the old manner of working, and sensibly reducing the cost of engraving, have extended their horizon to all who cultivate a knowledge of design.

Up to the present, few artists appear to have brought the importance of modern discoveries to this point of view; and they are also few in number who profit by the advantages offered them, and who exploit the field which is before them in the domain of illustration. For everything illustrative we were formerly almost entirely in the hands of engravers—engravers on copper, engravers on wood, and engravers on stone. These were the artisans—owing everything to the artists—who alone conceived illustrations interpreting the subjects according to the very different degrees of their artistic sentiments. This is the principal cause which has alienated illustrators, and is easily understood, for often the original executed by some artist has not been properly interpreted by the engraver entrusted with the work of obtaining the same effect and spirit from wood; a shade of difference in the idea of the subject entailed a sensible difference in the result obtained.

Along with this, it is necessary to note the defective methods employed to obtain half-tints and the relative shades of the original. The cuts of the engraver, however fine they may be, cannot be compared in value to the half-tones of an oil painting, or of a water-colour or crayon. This lack of completeness in the reproduction accentuates daily in face of the work of modern painters who attach special importance to atmospheric transparency, to vibration, and to the harmony of colours; the most facile and experienced burin cannot translate the delicacy, softness, and effects sought and intended by the artist.

On the other hand, while it should not be understood that modern processes based on photography are absolutely perfect and without fault, yet the results obtained certainly warrant the deduction of the evident superiority of these means of reproduction.

It is incontestable that the results obtained by the processes of photogravure (heliogravure) have never been surpassed, and that the extension of these processes will contribute powerfully to the development of taste and artistic education.

We may then state that the applications of photography in the field of illustration allow each artist to

be really and truly the author of his work, in assuring him of a faithful reproduction of the subject he has designed; that is, the chemical means and methods employed for the reproduction are unable to affect the imagination of the workman, whilst the hand which guides the burin cannot escape its influence.

At the present day, illustrative art penetrates into all the domains of human activity, journals, reviews, books, price lists, prospectuses, etc., all present themselves enriched with illustrations of a more or less showy or fine character. Modern processes offer all their resources to science, to the arts, to education, as well as to trade and commerce. There is a vast ground open to the exercise of the skill of artists which renders it possible, without lessening their value, to place their skill at the service of all, and to make it serve the purpose of a wide *clientèle*.
—*Bulletin Mensuel*.

THESE observations by the *Bulletin Mensuel* should be read alongside those recently put forth by a writer in *The Daily Telegraph*. This article has called forth a reply from Mr. Walter Crane, and as an authority from the artist's and art critic's point of view, his remarks are of interest.

"In your interesting article on the decline of line engraving and the increasing adoption of 'process' for reproducing surface-printed illustrations in place of wood engraving, which has made the latter a precarious pursuit, you do not mention the name of W. J. Linton, who may be said to be the last of the old school of line engravers on wood. His great work, 'The Masters of Wood Engraving,' traces its historic development, and gives battle, from the craftsman's point of view, to the modern texture-imitation school.

"Photography is, perhaps, the active force in bringing about the change, for not only does it make process engraving possible, but it also fosters a taste for certain methods of representation generally called realistic. This, and the general decline of design—and use of line for the sake of its own beauty and expressiveness—have, no doubt, greatly contributed to bring about the change.

"But while many artists prefer their work "processed" to being chopped away, most, I think, would acknowledge the superiority of a good facsimile woodcut. A good woodcut is better than a bad process block. The process line can never have the firmness of a good woodcut line; but good facsimile wood engravers have become rare in these days.

"The fact is, the original drawing of the artist is one thing, and the reproduction, whether by wood or process, quite another. The desire for an exact facsimile has led to the use of process, and process being cheaper cuts out the woodcut. Both, of course, can be cheap—and nasty; but at its best give me the woodcut.

"There are signs that wood engraving will revive again, after holding its own as the great popular interpreter of art since the invention of printing; and, with the revival of printing as an art, the craft of the wood engraver, contributing as it has done, in association with vigorous design, to the beauty of books, cannot permanently suffer neglect."

Lithographic Exhibition at the Leicester Art Gallery.



NOVEL and interesting exhibit, designed to illustrate the principal methods employed by the lithographic artist, has been on view in the past month or so in one of the new rooms of the Leicester Art Gallery, New Walk. It is needless to point out how the lithographer's art has advanced by leaps and bounds within recent years. No one can fail to notice what a multiplicity of processes are now employed in the illustration of our books and magazines, yet to the vast majority of people the steps by which

these results are arrived at, are, at best, but very imperfectly understood. As a means of supplying this information, and affording a clearer conception of the manner in which the artist and printer co-operate in all stages of the work, this exhibition forms a valuable object lesson, and will doubtless greatly interest many visitors. On the walls are placed a series of original water-colour drawings and pen-and-ink sketches, the latter specially designed for book illustrations, and, by way of contrast, a set of Knöfler prints is particularly interesting as showing to what a pitch of perfection the art of colour printing from wood blocks has been carried. For an explanation of the way in which artists' drawings are reproduced for purposes of illustration there is a table case, in which specimens are shown of lithographic work on zinc and on stone, zinc-plate process-etching work, engraving and etching on copper, and photo-process blocks. Perhaps the best known method is the one in which the drawing is made upon faced blocks of lithographic stone, a compact magnesian limestone which is principally obtained from Solenhofen and Pappenheim, in northern Bavaria.

Work of a similar character is shewn upon a series of zinc plates, which represent the latest substitute for stones. In this method the surface of the plate is coated with a composition which takes grease in the same way as the stone, and thus the subsequent manipulations are the same in both processes. Another specimen shows how impressions can be transferred from paper to the plate, thus allowing several to be printed at once—a distinctly time-saving method.

Some interesting photo-process blocks and impressions from them serve to illustrate a branch of the art which has been largely used of late years. In taking the photograph, which in this case forms the basis of operations, the photographic plate is placed behind a screen, which breaks the film up into a vast number of minute dots, which in the printing give the familiar finely granular appearance. After the photograph is taken an impression is secured upon a plate of metal,

which latter is afterwards acted upon by acids. As a result of this treatment, the minute dots just mentioned are left standing in relief, and, without further manipulation, the plate can be inked, and any number of impressions obtained.

Some fine examples of etchings upon copper are shown—one noticeable for the fineness of the line work—and also a specimen of Day's patent shading medium apparatus, an ingenious contrivance of great assistance to the lithographic artist as a time-saving appliance, enabling him to readily copy the tints from a drawing and transfer them to the stone. A sheet of prepared gelatine, one surface of which has a granulated appearance, is stretched upon a wooden frame, which can be turned in the same manner as the cover of a book, through an angle of 180 degrees. The first step is to ink the granulated surface of the film, after which it is brought down upon the face of the stone, which, however, it does not quite touch. It is possible to trace the outline of the "key" sketch upon the stone through the film, and by pressing with the finger or a suitable instrument the artist is able to transfer the ink to the stone in any desired spot. After an impression has been made, it is possible to slightly alter the position of the film by means of micrometer screws, so that when it is brought down again upon the stone the little elevations charged with ink leave their marks in a fresh position. By this means, very fine gradations in the shading may be obtained.

A water-colour drawing entitled "In the Gloaming," is noticeable from the fact of its having been done by a clever American invention known as the "air-brush." Air is pumped from a reservoir into the instrument, where it is divided into two streams. One of these actuates a small wheel, which imparts a to-and-fro motion to a very fine needle, causing it alternately to be dipped into a spoon-shaped cavity which holds the liquid colour, and to be brought under the second stream of air, which blows off the colour from the needle point on to the paper in the form of fine spray. The amount of colour thus distributed can be regulated at the will of the operator, and the effect produced is very soft and characteristic.

The limitations of space preclude our noticing any other points of interest in the exhibition, which is certainly well worth a visit, particularly from those who are interested in the modern developments of lithography.—*Leicester Daily Post.*

[The whole of the material for this exhibition was lent by Raithby, Lawrence & Co., Ltd., and the Knöfler prints by the editor of the B.L., all being very tastefully arranged by Mr. E. T. D. Stevens, artist-manager of the litho department of the Company, who executed the water-colour views and "air-brush" picture, and most of the artists' work shewn on stones and plates, as well as the dainty copper etchings and pen-and-ink sketches.]

IT is not generally known that quarries of a good quality of lithographic stone exist at Podrina, in Servia. They are at present undeveloped for want of means, the Government being poor, and private enterprise meeting with too many difficulties with regard to means of transport and sale.



HUGHES & HOLGATE

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and Illuminators,

TO THE TRADE

BANK CHAMBERS,

BURNLEY.

While thanking their
many friends for the kind support
extended to them, desire to call
attention to their increased facilities
for the production of

ARTISTIC AND EFFECTIVE DESIGNS
for all branches of Lithography.

Careful and prompt attention is
given to all orders.

ILLUMINATED ADDRESSES
A SPECIALITY.

Colour Work on Stone or Zinc Plates.



T.W. Holgate.

Specimens.

READERS of the *Revue des Arts Graphiques* will be pleased with the coloured supplement presented with its current number. The sympathy and co-operation of all classes in the enthusiasm into which "La belle France" has worked her fair self over the visit of the Russian fleet to Toulon, with the festivities at that port and at Paris, has shown its presence in many ways, the supplement in question being only one of many reflecting the national sentiment. A coloured supplement of a descriptive and patriotic character has recently appeared in the popular *Petit Journal*; many emblematic designs and portraits of the heads of the two nations have been published, and a capital booklet by M. Legras on "Uniforms of the Russian Army" has been found very acceptable. The supplement in question is a sort of Franco-Russian allegorical design, including figures representing the rulers of the respective countries joining hands, while overhead flaunts a trophy of the combined French and Russian colours. In the far background the gaily decorated war vessels, crowded with bunting and surrounded by small boats, are evidence of the *rapprochement*. Apart from its significance, the specimen is an attractive piece of chromo-lithography, brightly coloured and well and tastefully designed.

OUR New Zealand correspondent writes that Mr. A. D. Willis, Wanganui, has nearly completed an historic chromo-lithograph picture of one of the most noticeable incidents in connection with the Maori War, viz., the death of Major Von Semskey, which occurred in action near Manai on the west coast of the North Island of New Zealand. The picture, which is taken from an oil painting by Watkins, of Auckland, shows the Major falling back fatally wounded, with his comrades in the background either carrying on the fight or removing their dead, whilst the cowardly natives, firing from behind trees, are revealed here and there. The whole work shows a clear conception of a stirring scene, and when completed by the premier lithographer of the colony, will prove a splendid memento for old colonials, as well as their friends in England. The picture will be printed in fifteen or sixteen colours on good imperial paper.

THE illuminated address, printed on white satin, which was presented to their Royal Highnesses the Prince of Wales and the Duke and Duchess of York, upon the occasion of their opening the library and reading room adjoining the South London Fine Art Gallery at Camberwell, was printed by the *Hunts County News Co., Ltd.*, Huntingdon, from designs by the manager, Mr. W. F. Edwin, and is a very artistic achievement. The address was bound in book form by Raphael Tuck & Sons, and bore on its outer covers the emblematic mottoes of the Old Working Men's College, surrounded by a decorative border of crimson lake, in which the white rose of York was blended, whilst the address itself was emblazoned within a floriated design. It has been decided to place a facsimile of it permanently in the Art Gallery.

Book Notes.

A NEW cheap edition (2/6) of the well-known "Art Essays" by John Burnet has recently been brought out by Messrs. Percy Lund & Co., The County Press, Bradford. The original editions, besides being costly, have been long out of print, and are seldom to be met with. Burnet's Essays are a well-recognised store of useful information and hints for the art student and the art worker who should feel deeply indebted to the publishers for this cheap and handy edition, which is embellished by the original illustrations, and is neatly and clearly printed and tastefully and strongly bound. The chapters on "The Education of the Eye," "Light and Shade," and "Composition," are alone worth the cost of the book.

MR. MARTIN J. HARDING, of Shrewsbury, is engaged upon the preparation of what should be an interesting and at the same time exceedingly valuable work, namely, an architectural account of the churches of Shropshire, illustrated from photographs specially taken. Mr. Harding is doing the photographic work, the text being undertaken by D. H. S. Grainage, B.A., of King's College, Cambridge. The book will be published in two volumes, and will contain accounts of over three hundred churches.

The Amateur Photographer announces the commencement in its columns of a translation of Vol. III. of Dr. Eder's incomparable "Handbuch der Photographie," which forms a complete treatise on the use of gelatino-bromide and gelatino-chloride of silver emulsion. The book has long been the standard work on photography, and has now run through four editions in German, so that the English translation will place this—the most complete and reliable—handbook at the disposal of all interested in photography. Photo-lithographers will note this additional proof of our contemporary's enterprise.

THE October issue of *The Studio* is most attractive. The Arts and Crafts Exhibition, as held in the New Gallery, comes in for the lion's share of attention, the occasion affording a capital opportunity for a critical and appreciative description of this, the fourth exhibition. A large number of illustrations give a good idea of the main features of the show, and, with the various descriptions, are full of suggestive and valuable ideas to artists and higher-grade craftsmen. *The Studio* claims to advance "applied art," and this is the right way to do it.

RECENT numbers of *The English Illustrated Magazine* evidence some of the improvement upon which it bases its claim to the consideration of English readers. The numerous illustrations are approaching more what we may fairly expect from an ambitious high-class monthly, while the reading matter well sustains its reputation as interesting and valuable.

THE October and November numbers of *The Art Decorator* fully sustain the art reputation of this useful journal. The publishers, Messrs. Hodder Brothers, are removing to their new premises, 18 New Bridge-street, E.C.

The Annuals.



ND what have we to say about the annuals this year? Well, in two words, not much! What can we say? First of all, as in previous years, the leading papers are trying to excel each other in the quantity of plates which they "give away" at Christmas. We say "give away," for it cannot be expected that the price paid to the publishers is a fair or adequate return upon the labour ex-

pended. This is the result of competition, and it is difficult to think that competition which narrows the margin of profit so low bestows all the benefit which the theorists are wont to attach to it. Do the public value the chromo-lithographs thus thrust upon them by the dozen more highly than they formerly did, because they now get three for the shilling instead of one, as of old? We are inclined to think they do not, and speaking from one's own standpoint, it seems to be far more preferable to have one excellent copy of an interesting picture, instead of three copies of what in most cases may be considered very commonplace and weak productions. Undoubtedly the publishers know the public taste, and they cater to it rather than endeavour to raise it. Judged from this standpoint, there are very few of this year's annuals worthy of a place upon our walls. Some of the subjects have a momentary interest, but they fall so low in execution as to entirely lose their hold as works of art, or works of difficult execution.

Turning to the actual works which are before the public, there are none so attractive as those published by Pears. The plate of the monks forms a fitting companion picture to the monks of two years ago, as does the oriental subject by Coleman. The third plate, by F. Morgan, is also a companion picture to that of two years ago by the same artist, but there seems to be a lack of reality and too much colour in its working out to give it the appearance of a master work. Of these plates, it is a pleasure to see that two of them have been printed in London and the other in Nottingham.

This year the *Gentlewoman* has brought forth its chromo lithograph upon satin, illustrating what can be printed upon such a fabric, and useful to printers in that sense if in no other. The picture is pretty but by no means one which will be prized.

Next to Pears' *Annual*, the best execution seems to be that given with the *Sporting and Dramatic*, entitled "Memories." The treatment apparently suits the idea generally held of the district from which it is taken, and the plate bids fair to gain a good share of public favour. This plate is printed by Otto Troitzsch, Berlin, and bears the smooth trade mark of Continental production. With the same paper is given a small plate of "Pierrot" (printed in Holland), which has a certain amount of merit.

With such a large variety of prints, it is very difficult to say which are the better ones. Taken as a whole, there is a great sameness, and it is scarcely possible to do more than enumerate the plates or give them more than a cursory review.

The *Illustrated London News* has three plates, entitled "Grandfather's Pet," "Une Colombe," and "Say Please"; the first printed in Nottingham, the others in London. These plates are anything but striking, and it is possible that there is room for improvement in them. *The Graphic* also gives three plates of a mediocre order: "The Squire's Daughter," "A Proud Father," and "Lilies," of which the greatest merit as a picture seems to be found in the group of dogs. It would have been satisfactory to see the imprint on these productions as plainly as on many of the others.

Black and White gives a well-executed picture, called "Reflections," printed by Otto Troitzsch, Berlin, which may receive a certain amount of patronage. The plate "Don't Tell" given with *The Sketch* (printed in Nottingham) seems a very curiously chosen subject, without much merit. As usual, *Father Christmas* is on the humorous side of child life, with its plate "I've Biggest"; and *Yule Tide* gives another dog and child picture, entitled "Don't Tell," with six other plates, all of which are pleasing in their way. Somewhat in the same vein is the plate given with *Horner's Penny Stories*, entitled "Master of the Rolls" (printed in Holland), which can scarcely be considered a master production.

The Queen gives a very fair subject in "The Proposal," printed in London, which may claim a certain realistic character in its quiet colouring. The plate "Cosy," with *The Lady's Pictorial*, is much below previous years' supplements with this journal.

The Strand plate "From the Sublime to the Ridiculous," printed in London, is a step in advance of past years' works, but still lacks certain features of careful production to render it either natural or picturesque. Weldon's three journals are adorned by four plates, all printed in Nuremberg. They are pleasantly coloured, but otherwise are not attractive, and in several points a little out of drawing. The rough finish of "Happy Days," printed in Nottingham, with the *Penny Illustrated*, is also unattractive, the colouring in it being rather overdone. The little plate "Go Shares," printed in London, with *Pearson's Weekly*, is another of the plates which is just passingly attractive—and that is all. *The Young Ladies' Journal* publishes the well-worn subject of "Little Red Riding Hood," and does not fall behind previous attempts of the same subject. The plates with *The Sheffield Weekly Telegraph*, "Which hand will you have?" and "Playmates," are somewhat flat; whilst *Great Thoughts*, with its two Scriptural plates, cannot be said to have achieved a triumph.

In thus briefly reviewing this year's annuals, it may have happened that some have been omitted, but on the whole they are of such a low order that there is little encouragement to dwell upon any of them. Tastes may differ, and some of our readers may see perfections where we cannot; we must therefore leave the final judgment to individual taste.

Derby and Leicester Litho Technical Classes.

URING the last session the Hull Patent Lithographic Zinc Plate Co., Ltd., made an offer of prizes to be competed for by members of the above. The first competition took place in August, the conditions being similar to those of the Liverpool class published in the B.L. for August and September.

The first prize of £2 brought in some remarkably good work. Three of the competitors were considered of equal merit, and elected to undergo another test, each being supplied with a transfer from the fine heading plate of the Hull Lithographic Zinc Plate Co., Ltd. The proofs submitted in the first trial were from subjects of so varied a character as to prove not only the skill of the workman, but the utility of the plates for all classes of work—two being views from old engraved copper plates, another a view with a considerable amount of machine ruling in it; in transfer and retransfer after removing a portion of the work off the plates, there was also script, fancy lettering, and machine-ruled memo, and note headings, along with retransfer from stone.

For No. 2, prize of £1, the work from grained stone to zinc plates and impressions in four different coloured inks, brought in some capital work; the transfers going down clear and solid, and the impressions left nothing to be desired.

No. 3, prize of 10/- was for apprentices only, transferring of solid from stone and zinc from copper or steel plate to the Hull zinc plate, and impressions therefrom. Mr. Watts did some very good work in this class, for which he was highly commended, but not being an apprentice he was disqualified.

The prizes were awarded as follows:—

1st prize of £2	... . . .	W. Stevens, Leicester.
2nd " "	£1	... . . . J. W. Watts, "
3rd " "	10/-	... . . . A. J. Bott, Derby.

The competition has been the means of turning the attention of those interested in technical education to the practical side of the question.



IT is said that 75 per cent. of the illustrated books of the season are indebted to photography for the illustrations that appear in them. To photographers of artistic inclinations, one book of surpassing interest should be that on "Rembrandt," which Mr. Heinemann has published. It contains a number of full-page photogravures of the master's work taken from both public and private collections, besides numerous illustrations in the text.

THE BRITISH LITHOGRAPHER annual volume recently issued from the De Montfort Press, Leicester, makes a handsome book of technical reference for the lithographic printer, and indeed his letterpress brother will find much in it to interest and instruct him. A special feature is the illustrations, which are examples of various processes, in colour, and in monotint, and are most artistic in their character.—*British and Colonial Printer and Stationer.*

Answers to Correspondents.

N reply to Mr. A. Lingard, of Woodville, the indiarubber roller which has been in use and has become "tacky" will be very difficult to renovate. The turpentine has entered into the indiarubber and made it semi-solid, and if it has been on any length of time the underneath layers of rubber will be similarly affected. Cold water, applied in a running stream, might combine with the turpentine and resinify it, thus hardening the roller again. If the roller be well covered with French chalk, it will absorb the turpentine. By repeating this method the whole of the turpentine may be extracted, and the roller almost restored to its original consistency. After such treatment the talc must be scraped off very carefully before use. If you get the roller back into a satisfactory condition, it is advisable that it should be coated with a solution of pure or bottle rubber, in benzole or bisulphide of carbon, after a careful wash in turpentine. Such a coating should be put upon a new roller to preserve it from becoming "tacky." The material for "masking" upon collotype films was fully described in the chapters upon "Photo-Lithographic Processes" in No. 12 of this journal, to which we refer you.

IN reply to Mr. Wm. Beaumont, Auckland, New Zealand, the compilation of colours by Mr. C. H. Wilkinson referred to on page 83 of the February-March number of this journal, is in three immense volumes, known as "Harmonious Colouring," under which title the merits of the work were discussed in a previous number of the journal. The cost of the three volumes is sixty guineas, and full particulars can be obtained from the patent office in St. Ann's-square, Manchester, from Mr. Barrett.

IN reply to Mr. C. R. Hume, of London, we must refer you to the answer given to Mr. F. Hodge, of Australia, on page 36 of No. 13 of this journal, and add that when printed and dried the "transparency" is given by varnishing with a hard, drying terebine, without previously sizing the paper, after which the final brilliant varnishing is done.

IN reply to Mr. N. Zeyen, it is difficult to give you the definite address of any firm from which this residuum may be obtained. You might try any of the importers of oil, who put the oil into large tanks, such as the Russian Oil Co., or Anglo-American Oil Co., or you might try the Avonmouth Oil Works.

Correspondence.

38 Mortimer-road, Kingsland, N.
To the Editor of THE BRITISH LITHOGRAPHER.

DEAR SIR,—Perusing your BRITISH LITHOGRAPHER, my attention was drawn to the affair of Baird v. Miller & Lang. As far back as 1862 the firm of Mansell & Co., Red Lion-square, used the litho stone for the purpose of embossing paper, which operation was performed by an Eagle press. I, at that time was employed as litho printer.

Yours &c., C. CHIPPER.

Trade Notes.

S the business of collotype printing is now rapidly increasing in this country, it is to the interest of firms contemplating adding plant and machinery for this comparatively new branch of the art of printing to have a knowledge of the best machines for that purpose, and this would naturally lead them to enquire as to who has had the longest experience and is thoroughly acquainted with the requirements of the work. This condition is afforded by the well-known firm of Schmiers, Werner & Stein, who are represented by Messrs. F. Kühn & Co., 66 Basinghall-street, E.C. For over twenty years past this firm has been gaining a reputation for the finest class of machines for litho and collotype, and it is well within the mark to say that 75 per cent. of all the collotype printing done in the world is at present produced on their machines. The system on which their collotype machine is constructed is the result of many years' study and experience, their special advantages being the practical arrangement of the plate bed, the construction of the cylinder, and the provision for inking the plate one, two, or three times, as well as for double printing. Considerable ingenuity is shewn in the thoroughly simple and practical manner in which these arrangements have been combined in their machines; the firm manner in which the printing plate is secured, combined with the elastic action of the cylinder, render breaking of the glass plates a practical impossibility. A further important feature is that their collotype machine can be supplied to execute litho work as well, so that a firm wishing to start in a small way with one machine, and not having sufficient collotype work to keep it fully employed, could use it in spare time for litho. This is a feature that will commend itself. Both in material and finish of construction, Messrs. Schmiers, Werner & Stein's machines exhibit the utmost perfection of mechanical workmanship, and the immense mass of testimonials from users of their machines shew that in every case they have given the utmost satisfaction to the purchaser, and in numberless instances have led to repeat orders, some firms having as many as six or seven of their machines constantly at work.

MR. E. BEAUMONT, 73 Hounds-gate, Nottingham, has invented and obtained a patent for a small apparatus whereby lithographic and other crayons and charcoal can be sharpened to perfection quickly, with a total absence of litter, and by the employment of one hand only. Its sale price will be that of an ordinary penknife. This apparatus, a crayon and charcoal sharpener, has been submitted to and approved of, amongst others, by the Headmaster of the South Kensington School of Art and the Headmaster of the Nottingham Municipal School of Art.

As a regular subscriber to THE BRITISH LITHOGRAPHER I have pleasure in expressing to you in high terms my thorough appreciation of the excellent style in which it is conducted.—J. ALEX. NESS, Belfast.

THE American Artists and Engravers' Protective Association is sending a petition to the various lithographic centres throughout the country for signatures to be presented to Congress, that the tariff on lithographic plates and lithographic work, mentioned in Schedule C, plates, 25 per cent. *ad valorem*, and in Schedule M, paper and books, 35 per cent. *ad valorem* of the tariff laws be increased. Joint committees from the Artists' Association, and from the Printers' Association, in all cities, are to wait upon the Congressmen of their several districts and get them to work for the cause.

ADVERTISERS who fancy high-class coloured lithographic work as a means of publicity, may glean some practical information from THE BRITISH LITHOGRAPHER. The Oct.-Nov. number of this admirable journal contains some delightful specimen work. The initial number of the third volume is a really beautiful production, and a model of fine printing.—*Fame*.

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LITHOGRAPHIC WRITER is open to engagement. High-class commercial work; sketches for engravers, die sinkers, &c. Comments on work have appeared in B.L.—Address: "A.S.F.," 83 Warwick-street, Pimlico, London, S.W.

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SPECIMEN OF CHROMO-LITHOGRAPHY IN ELEVEN COLOURS,
WORKED FROM BERTLING'S PATENT IMPERISHABLE TRANSFERS, PULLED FEBRUARY, 1890.
RE-TRANSFERRED AND PRINTED BY RAITHBY, LAWRENCE & CO., LTD.,
DE MONTFORT PRESS LITHO, NOVEMBER, 1893.



CONDUCTED BY ROBERT HILTON.]

VOL. III.—NO. 15.

FEBRUARY—MARCH, 1894.

[CHARLES HARRAP, ASSISTANT EDITOR.

PRICE EIGHTPENCE.

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OUR SUPPLEMENTS.

BERTLING'S PATENT IMPERISHABLE TRANSFER PAPER—
FLORAL SUPPLEMENT.

We have much pleasure in presenting to our readers in this number another novelty, which will doubtless be of much interest to artists and printers alike. The specimen of lithography—a flower group—in eleven colours, worked from Bertling's Patent Imperishable Transfers, is undoubtedly a very fine piece of work, and of itself speaks highly for the thoroughly practical merits of this important invention.

This process has been known to a few large firms for several years, and has been thoroughly tried by them, and also ourselves, before bringing it under the notice of the trade. The opinions of two well-known houses, recognised as amongst the leading lights in the profession, will suffice to show our readers that this process has been tested thoroughly, and not found wanting.

Sir Joseph Causton & Sons write:—"We have pleasure in stating that we have used your patent transfer process for over six years, and have never known it to fail."

McCaw, Stevenson & Orr, Ltd., say:—"We have pleasure in stating that we have no difficulty whatever in producing satisfactory chromo work from Mr. Bertling's transfers. We have now had the system in use for two or three years, and since our transmitters mastered the early difficulties we have had no trouble."

Our own opinion will not weigh much after these; we present the example, and let that speak for itself. The transfers were sent to us, and our transmitters, who had never seen or handled the paper before, laid them down, and we give the result. We have also used it on our own work since then, and have had highly satisfactory results.

We will now describe the process to our readers:—Supposing, by way of example, you have a job on stone which you know will be wanted again at some future date, and you cannot afford to let the stones lie idle, nor spare the space they take up. You have the means in your hands now, and an absolutely safe one, of keeping the job on paper. Transfers are pulled on the paper, which is supplied in the usual way, sharp and clear, with the patent transfer ink, used as stiff as possible, taking care that the stone is quite dry before the paper is put on, otherwise it will adhere to the stone. Having pulled the transfer, place on it a small portion of the imperishable powder and gently spread it all over the work with a camel-hair brush. Return the loose powder to the tin, and incorporate the powder well with the ink on the transfer, by rubbing it with a soft pad of cotton wool (in the same way as when bronzing a sheet).

Now examine it and make sure that not a speck of superfluous powder is left on the sheet, and then put it away flat in a dry cupboard or box. The whole of the different colours of the job can be pulled in this way, and put in the same box, as they will not hurt lying on the top of each other, providing there is no heavy pressure. The stones can now be cleaned off and used for other work.

We will now suppose the time has arrived when the reprints are wanted, and will describe the process of retransferring.

The powder, being a dormant fat, cannot act on a stone which is cold or wet; the stone must, therefore, be warm, not hot; give it a slight polish to make sure of the surface being perfectly clean; wash clear and wipe dry; then, just as the last appearance of damp vanishes, lay the transfer on and pull through quickly two or three times with a good firm pressure; then damp the transfer on the back and pull through in the ordinary manner, as with an ordinary transfer, until the paper pulls off freely; then wash the composition off clean. Dry and powder in with French chalk, and put the stone aside to cool. On taking it up again, give it just a slight etch, and roll up in the ordinary manner. Treat all the other transfers in precisely the same manner, and you have the job once more on the stone, in condition fully equal to the originals.

The process can never fail, as the paper is un-stretchable, and the transferring is a dry process.

The transfers from this process are even firmer than the originals, as the finest dot has at least fifty per cent. of fat, whereas in a fresh transfer the amount of fat is almost nil.

The patentee is fully convinced that if any firm pulled transfers to-day of their best stones and put the transfers as well as the stones carefully away, and in five years' time laid the transfer down again, no printer would work from the original stones if he had his choice, as the originals would have become in a great measure flat, whereas the transferred stones would possess all the life and character of the originals when they left the artists' hands.

Considering that a set of transfers as required for the supplement shewn may be kept for ten years or more at a very trifling cost—as hundreds can be kept

on top of each other, requiring no special care except keeping dry—the importance of the invention will be clear to everyone.

The supplement has been reprinted from retransferred stones: that is, after the patent transfers were laid down, further transfers have been pulled and a full sheet printed of the job, the colours used being Messrs. Mander Brothers, in the following order: yellow, light green, buff, dark green, light grey, first red, pink, second red, dark brown, blue, and dark red.

We are confident that this patent will be largely used, and can safely predict a busy time for Mr. Bertling in the near future.

SPECIMEN OF A LABEL PRINTED WITH MANDER BROTHERS' INKS.

This supplement is given as a specimen of ordinary everyday work. The colours used can be seen at the top of the page, prices of which Messrs. Mander Brothers will be pleased to send free.

It is printed on common printing paper, as ordinarily used for this class of printing, and was worked from retransferred stones.

Specimens of label work used in other trades will follow from time to time, and will, we trust, be found useful.

THE PORTRAIT OF A LADY.

This pleasing piece of lithography, which we are able to shew through the courtesy of the Paradigm Boot Company, of Northampton, is a portion of an elaborate showcard lately drawn and printed for the company. Nearly the whole of the job was drawn with Day's medium, and should prove interesting to lithographers for that reason. The job has been worked with A. B. Fleming & Co.'s, Ltd., litho inks, the durability and brilliancy of whose manufactures leave nothing to be desired in a job which is to be very much exposed to light. It has been printed from retransferred stones on H. & L. Slater's, Ltd., celebrated chromo paper, to whom a large amount of credit is due for its softness, evenness, and excellent printing qualities.

Ten colours are used in this supplement, printed in the following order: yellow, flesh, red, light blue, pink, dark blue, light grey, dark brown, light brown, and dark grey.

The job was lithographed from a photograph, and the whole showcard, which is nearly double-demy size, is a fine, fully up-to-date specimen of lithography.

THE HULL ZINC PLATE CO.'S SUPPLEMENT.

Two more of the colours used in the production of St. Mary's Church, printed from the Hull zinc plates, are shewn, being the dark blue (No. 8) and light blue (No. 9). Both of these were printed on machine from retransferred zinc plates, and are very fine specimens of work, and speak well for the retaining qualities of the Hull Co.'s plates.

The two specimens were printed with Mander Brothers' inks, on Messrs. Smith & McLaurin's well-known chromo paper.

ARMS SUPPLEMENT, PLATE 5.

A further instalment of the arms of boroughs and towns, etc., is given with this number. These arms have been drawn direct on stone, and worked at

Printed with Quander Brothers' Lithographic Inks.
On Smith & Mc Laurin's Celebrated Chromo Paper.

Works - Wolverhampton.
Johnstone, Scotland.

Specimen of Chromo Lithography in all printings, drawn direct and printed at
machine from plates manufactured by the Patent Lithographic Zinc Plate Co. Ltd Hull.

Colour No 8. Dark Blue.

machine on retransferred stones. This supplement has been printed with Gilby & Herrmann's well-known lithographic inks, which are "made in London." We can speak from experience about these inks: they are very fine in body and excellently ground, work freely, and their covering qualities are excellent.

We now, as promised, give, in connection with these arms supplements, a list of heraldic terms, which we trust will be found useful:—

TERM.	APPLIED TO.
<i>Abased</i> :	An ordinary charge placed lower than its usual position.
<i>Apaubned</i> :	A hand shewing the palm.
<i>Armed</i> :	The claws and teeth of beasts of prey, and talons and beaks of birds of prey.
<i>Attired</i> :	The horns or "attires" of stags.
<i>Banded</i> :	The band of a wheatsheaf or garbh.
<i>Barbed</i> :	(1) The leaves of a rose; (2) the point of an arrow.
<i>Beaked</i> :	The beak of a bird.
<i>Bearded</i> :	The beard of an ear of corn.
<i>Belled</i> :	The bell fastened to the leg of the falcon.
<i>Buckled</i> :	The buckle of a bell or scroll.
<i>Caboshed</i> :	The head of a beast (<i>affronte</i>) severed from the neck.
<i>Chained</i> :	The chain of a collar.
<i>Charged</i> :	A charge upon which is another.
<i>Collared</i> :	The plain collar upon animals.
<i>Combed</i> :	The comb of a cock.
<i>Conjoined</i> :	The wings of birds joined together.
<i>Corded</i> :	An ordinary charge bound with cords.
<i>Cottised</i> :	An ordinary charge on each side of which is a smaller one.
<i>Countercharged</i> :	A field of two tinctures on which the charge or charges are charged in colour.
<i>Conped</i> :	The head or limb of an animal, etc., when cut off smoothly.
<i>Crested</i> :	The crest of a bird.
<i>Crined</i> :	The hair or mane and tail of a horse.
<i>Crowned</i> :	The crown when placed upon the heads of animals.
<i>Cuffed</i> :	The cuff of a sleeve or vestment.
<i>Debruised</i> :	A charge partially obscured by another.
<i>Degraded</i> :	A cross placed upon degrees.
<i>Dismembered</i> :	An animal whose limbs are shewn cut off from the body.
<i>Displayed</i> :	The wings of a bird expanded.
<i>Eared</i> :	The ear of a talbot or other animal.
<i>Eclipsed</i> :	The sun or moon in full complement, but sable.
<i>Elevated</i> :	Wings, the points of which are turned upwards.
<i>Embowed</i> :	An arm bent at the elbow.
<i>Embruised</i> :	A sword or spear with the point covered with blood.
<i>Endorsed</i> :	The wings drawn up over the back.
<i>Engiled</i> :	A sword when piercing the head of a beast, etc.
<i>Enhanced</i> :	An ordinary charge placed higher than its usual position.
<i>Ensinged</i> :	A charge upon which a crown is placed.
<i>Entwined</i> :	Any charge around which a serpent is twisted.
<i>Environed</i> :	Used in the same sense as the preceding.
<i>Eradicated</i> :	A tree torn up by the root.
<i>Erased</i> :	The head or limb of an animal, etc., when torn off instead of cut smoothly.
<i>Expanded</i> :	Wings when in that position.
<i>Extended</i> :	A charge extended to the edge of the shield.
<i>Fimbriated</i> :	The border of a flag or similar charge.
<i>Fired</i> :	A grenade or bombshell bursting.
<i>Flighted</i> :	The feathers of an arrow.
<i>Fourched</i> :	The tail of a lion when forked.
<i>Fructed</i> :	A tree with the fruit or berries upon it.
<i>Garnished</i> :	The ornaments of a helmet or similar charge.
<i>Gorged</i> :	Used indiscriminately with collared.
<i>Helved</i> :	The handle of a lochaber or battle axe.
<i>Hilted</i> :	The hilt of a sword.
<i>Hooded</i> :	The hood affixed to falcons.
<i>Incensed</i> :	Beasts, when fire issues from the mouth and ears.
<i>Inflamed</i> :	A beacon with fire burning.
<i>Interlaced</i> :	Three or more similar charges fretted or braced within each other.
<i>Invested</i> :	Wing when reversed.
<i>Jelloped</i> :	The comb or gills of a cock.
<i>Jessed</i> :	The leather fastenings of falcon's bells.
<i>Langued</i> :	The tongue of an animal.
<i>Leaved</i> :	The leaf of a tree or flower.
<i>Legged</i> :	The leg of a bird, etc.
<i>Lined</i> :	An animal collared, and with a line fastened to it.
<i>Masoned</i> :	A wall marked so as to represent masonry.
<i>Membered</i> :	Used often for legged.
<i>Muzzled</i> :	The muzzle on a bear.
<i>Noyed</i> :	Serpents, etc., twisted in form of knot.
<i>Pierced</i> :	A charge pierced in the centre, thus shewing the field.
<i>Pommeled</i> :	The pommel of a sword.
<i>Quartered</i> :	A shield or charge divided into four parts.
<i>Quened</i> :	The tail of a lion, etc.
<i>Quilled</i> :	A porcupine, or the quill of a feather.
<i>Reflexed</i> :	The line or chain of a collar thrown (or reflexed) over the back.
<i>Reversed</i> :	Wings when in that position.
<i>Ringed</i> :	The ring of a chain or other charge.
<i>Saddled</i> :	The saddle of a horse caparisoned.
<i>Scaled</i> :	The scales of a fish.
<i>Seeded</i> :	The central seeds of the rose.
<i>Shafted</i> :	The shaft of barbed arrow.
<i>Slipped</i> :	A trefoil, cinquefoil, rose, etc., when the chalk is cut diagonally or slipped.
<i>Spotted</i> :	A leopard, panther, etc., when spotted of another tincture.
<i>Stalked</i> :	The stem of a flower.
<i>Stringed</i> :	The strings of a musical instrument.
<i>Surmounted</i> :	Used indiscriminately with debruised.
<i>Transfixed</i> :	An animal pierced with any weapon.
<i>Triple-towered</i> :	A tower having three smaller towers issuing from the battlements.
<i>Trunked</i> :	A tree cut and shewing the section.
<i>Trussed</i> :	A bird preyed upon (or trussed) by one more powerful.
<i>Tufted</i> :	The tuft on portions of the body of real or chimerical beasts.
<i>Turned up</i> :	<i>A chapeau-de-maintenance</i> bordered (or "turned up") with fur.
<i>Unguled</i> :	The hoof or ungules of beasts.
<i>Vambraced</i> :	The military covering or "vambrace" of the arms (<i>avant-bras</i>).
<i>Vested</i> :	The habit, clothing, or "vestment."
<i>Voided</i> :	An ordinary charge, the central part being removed or voided.
<i>Vulned</i> :	An animal wounded or bleeding, etc.
<i>Wattled</i> :	The gills or wattles of a cock, etc.
<i>Winged</i> :	The wing of any bird or chimerical beast.
<i>Wreathed</i> :	The head when encircled with a wreath of twisted silks.

By reference to the above alphabet of heraldry, the reader can tell what is the meaning of the descriptive terms so largely used.

HEAD OF LION SUPPLEMENT.

This we are enabled also to give through the courtesy of the Paradigm Boot Company, and we are confident that this picture will be useful to all artists, etc., as a good drawing of the subject. It has been reproduced in ten workings, and printed from retransferred stones on chromo paper supplied by Messrs. Smith & McLaurin, who keep a large and well-seasoned stock at their London warehouses.

THE SUGGESTIONS

inset we are compelled to hold over on account of the large number of costly coloured supplements which appear in this number, but we hope to be able to continue the series in our next.

FLEMING'S NEW "MADDERETTE."

Another supplement in this issue shows a fine specimen printed with this new special colour and Fleming's magnificent bronze-blue—a handsome combination. "Madderette" is "free from aniline dye," and "guaranteed to be absolutely permanent," so that printers doing fine work will not be annoyed by seeing part of it disappear when exposed to daylight; in fact, the manufacturers say—and it is understood that they speak from the results of practical experience—that it

will stand unaltered any length of time, "as long as the paper itself lasts." It works clean and possesses great covering power, and it is equally well adapted for broadsides and for fine work; and another great advantage is that it can be varnished with spirit varnish. Although not quite so bright as ordinary aniline-vermilionettes, it has the advantage over them that it does not lose its brilliancy in a few days, always sustaining unaltered its depth of colour and richness of tone. In printing the supplement presented in this number, we found its working and covering powers first-class in every way, and there is no question as to the position it is bound to occupy amongst strictly "fast" colours, whether for fine work or for outdoor advertising purposes. As regards the bronze-blue which appears in the same supplement, it is a colour that is familiar to all our best printers, and they have but one opinion about it, which is emphasised by the quantity they use of it. It is a splendid colour, and in easy working and economic covering powers is as good as it looks.

MESSRS. ROBERT GARDNER AND CO.'S
COLLOTYPE SUPPLEMENT

is a reproduction of a view near Haarlem, in North Holland, after a photograph by Mr. J. Craig Annan, of Glasgow, taken by him during his holidays last year. As regards the execution of this collotype print, nothing need be said, Messrs. Gardner & Company being known as experts at this class of work. The negative was taken on a celluloid film, and afterwards reduced to the size in which it now appears. A notice of the firm and portraits of the principals will be found elsewhere in this issue.

IT affords me great pleasure to again congratulate you upon the production of the B.L. The portrait of Tennyson is a very fine specimen of lithographic art.
—E. J. SWETNAM, Newcastle-on-Tyne.

Book Notes.

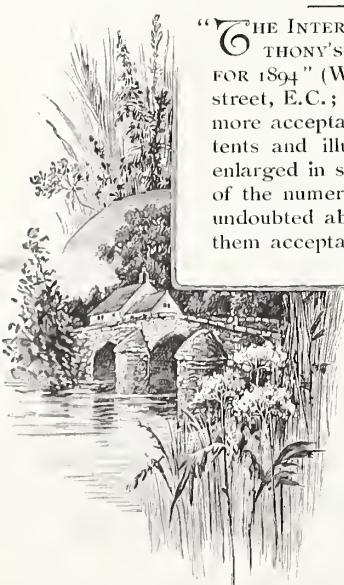
"THE INTERNATIONAL ANNUAL OF ANTHONY'S PHOTOGRAPHIC BULLETIN FOR 1894" (W. E. Peck & Co., Friday-street, E.C.; 3/-) is brighter and even more acceptable than ever in both contents and illustrations, and has been enlarged in size. The practical nature of the numerous pithy papers, and the undoubted ability of the writers, make them acceptable and reliable, not only

to professional and amateur photographers, but to artists, engravers, and printers. As usual, the illustrative feature of the book is one of its strongest recommendations. A charming aristotype print forms the frontispiece, and some score of full-page pictures show the

perfection to which photographic processes for book and magazine illustration have been brought. Its international character is shewn in the full index of well-known home and foreign contributors—amply attesting the popularity of the Bulletin. A perennial spring of information to enquirers, the annual is not only wonderfully useful as a textbook, but fascinating to the intelligent reader.

"SYSTEMATISCHE FARBENLEHRE" (Scale of Chromatic Colours), by Hermann Hoffman (Forster and Borries, Zwickau, Saxony) is a new work dealing with the theory of colours. Speaking of the increasing need of a knowledge of colour both in industrial centres and in social life, the author regrets that no place is given in the school curriculum to the most necessary science of colour, and emphasises the disadvantages under which the graphic arts in particular labour in this respect. His book is intended to remedy this, and the subject being presented in a form that the student can readily grasp, it will be found a ready guide for those who desire, by the shortest method, to gain a good groundwork in the science of chromatics with special reference to practical daily needs. The author has succeeded in making his book an exceedingly valuable guide through the wonderful world of colour, and the reader will doubtless, after perusal, arrive at the conclusion that the theory of colour is no longer as a sealed book, but that it is in reality both simple and easy of comprehension. It is next to impossible to exactly describe colours, and thus the author has drawn up a scale for the thirty grades into which his system is divided. In a series of a dozen plates the colours are shewn in chromatic order, accompanied by other plates (making thirty-six in all) illustrating the combinations in actual working, and including a complete set of the various workings of a chromo picture, and from these harmony, contrast, and optical illusions in colour may be studied. The plates are issued loose in a separate portfolio, and a good index adds materially to the value of the work. We understand the author has been ten years in compiling this valuable book and the series of illustrative plates, and the result does credit to his care, research, and patience. An English edition would prove very acceptable to the trade beyond the Fatherland.

THE title of the new journal, *The Photogram*, smacks of smartness, and the initial number is smartly edited, excellently arranged, and very tasteful in type and graphic dress, as well as being much better printed and on better paper than any of the photographic journals of home production. The special supplement, "An Old Man's Head," by Mrs. S. Francis Clarke, is a gem of artistic work, and all the illustrations are not only excellent specimens of photographic work, but are carefully brought out in the blocks. Mr. H. Snowden Ward, the editor, and his talented wife, Catherine Weed, formerly editor of *The Amateur American Photographer*, have had plenty of experience, and the thoroughly practical up-to-date contents and bright fresh appearance of their bantling give every promise of a full measure of the success we heartily wish them. (*The Photogram*, Ltd., Memorial Hall, Farringdon-street, E.C.: 4/- per annum.)





Negative by J. CRAIG ANNAN, Glasgow.

Collotype by ROBERT GARDNER & CO., Glasgow.

NEAR HAARLEM (NORTH HOLLAND).

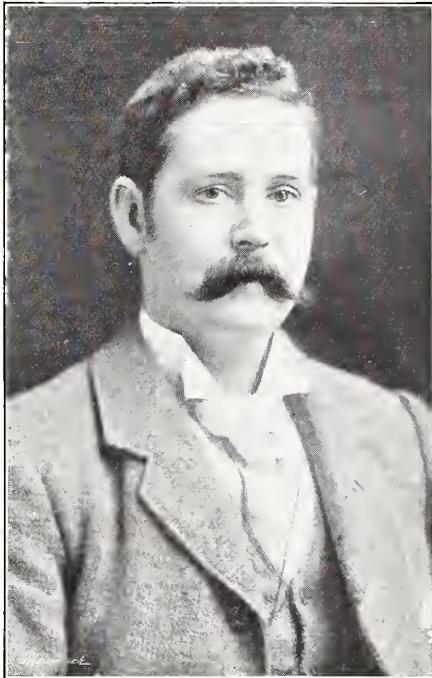
OUR PORTRAIT GALLERY.

Robert Gardner & Co., Glasgow.

HE firm of ROBERT GARDNER & Co., chromo and general lithographers and collotype printers, dates from 1854, when it was established in a very small way by the senior partner. The business, as will be seen from the date, was commenced in the old hand-press times, long before litho machines were thought



ROBERT GARDNER.



JAS. S. GARDNER.

of; a gradually increasing trade forced the firm to remove from one place to another until they now possess premises with 15,000 square feet floorage, fitted with printing machinery of well-known makers, comprising the latest in the market.

In the earlier period of the business as many as twenty-six handpresses of various sizes used to be kept constantly going, principally on illustrations for ironfounders' catalogues and textile fabrics, a special branch which the firm still retain to a large extent; but in addition to these specialties, a good general business was carried on in shipping tickets for East India and South American trades, embossing, commercial and general lithographic printing, including the printing of high-class coloured Bible plates. The firm was early in the market when litho machines

were introduced, and at once laid down a plant for the more rapid turnout of the work: one machine led to another until at the present they have one of the best connections in the West of Scotland.

The senior partner, Mr. Robert Gardner, is an Ayrshire man, being brought up and educated in the quaint town of Irvine. The Irvine Academy was and is still a well-known school. When his education was completed he began as an apprentice to coachbuilding (then carried on by his uncle), but his artistic inclinations not having scope at this, he entered as an apprentice, in 1844, with the firm of Maclure and Macdonald, where, under the influence of such men

as the late Mr. Andrew Maclure, the late Sam Bough, and Sir Daniel Macnee, he rapidly advanced to be a competent draughtsman, proficient in all classes of lithographic work as then practised.

A few years served in the Liverpool firm of Maclure, Macdonald & Macgregor, suggested the advisability of making a start on his own account, and in 1854 the business, as already stated, was commenced.

Mr. Robert Gardner has been for three years, and still is, president of the Glasgow and West of Scotland Master Lithographers' Association.

In 1885 Mr. Jas. S. Gardner, eldest son of Mr. Robert Gardner, was admitted as junior partner. Educated in the High School of Glasgow, he entered business as apprentice-draughtsman in 1873, and after seven years served in the drawing office, and

a few more years as journeyman, was made a partner, when he at once took a most active part in the business. A practical man in most things lithographic, he was soon alive to the assistance that photography could give in a lithographic business, and as an amateur photographer he was most assiduous in taking every opportunity of practising the "black art." In 1888 collotype printing became his special study, and after a few months' hard experimenting, the first collotype machine was laid down, a second soon followed, and at this date the firm enjoy the good name of all for whom they have done work by this beautiful process. This department is under direct supervision of Mr. Jas. S. Gardner, who takes the keenest interest in collotype, from the taking of the negative to the finished print.

Now for a few words about the business premises:—Entering from 138 George-street, where the private offices and showrooms are, you see all round the walls, and otherwise displayed, specimens of the best class of litho and collotype work. Private telephone throughout the works is here installed.

The works proper is a large four-storey building, with 15,000 square feet floorage. The ground floor is devoted to the machine printing room, transfer pulling, and transfer departments. Here the floor is almost filled up with litho machinery, 30×40 bronzing machine (Silverlock's), two stone-grinding machines (Seggie), two powerful embossing machines, ink-grinding mill, etc.; engine room (large "Otto" gas engine); dynamo room. The flat is heated by hot-water pipes; all round the walls are stone racks.

The stone store-room is off the machine room; in it are original stones to the number of not less than 11,000, all having work thereon more or less in demand. All are kept in good order and numbered in a register kept for the purpose.

The second floor is divided into two by glass partitions, half being used as warehouse, works' counting house, with exchange and private telephones, the other half as cutting and finishing room. On this flat are guillotines, hand and power label punching machines, copperplate and metal printing presses, also cutting and packing departments of spool tickets and other labels required for manufactured thread goods.

On the same flat are the collotype machines, which are constantly kept running (the firm having work for some months ahead).

In the collotype branch chromo collotype is now receiving careful attention and experimenting.

The third floor contains drawing office, store for printed catalogue and book work. The collotype plate preparation room, with photographic dark room, is on this flat, both completely furnished with all appliances for turning out the work speedily and well. An electric arc lamp of high power is alongside for printing the images on to the collotype plate when daylight is not available, so that no stoppage of work is caused by dull weather.

The fourth floor is entirely given up to the guimming and varnishing departments; showcards, shipping tickets, spool tickets, and labels of all descriptions are here seen in every stage of progress. This room

has a perfect system of heating by means of boilers, and hot-water pipes running all round the drying racks.

As showing the comfortable circumstances as to light under which the work is turned out, the building has fifty-six large windows, besides side-wing skylights on ground and fourth floors.

The firm lately presented a printing press to the Glasgow and West of Scotland Technical College, for the furtherance of the Litho Technical Classes at present held there, and have taken considerable interest in promoting the success of this school.

The Collotype Supplement presented in this issue, and the study from life presented in a previous issue, both printed by Messrs. Robert Gardner & Co., are perfect examples of the best class of work, and will bear comparison with the very best that come to our notice from any part of the world.

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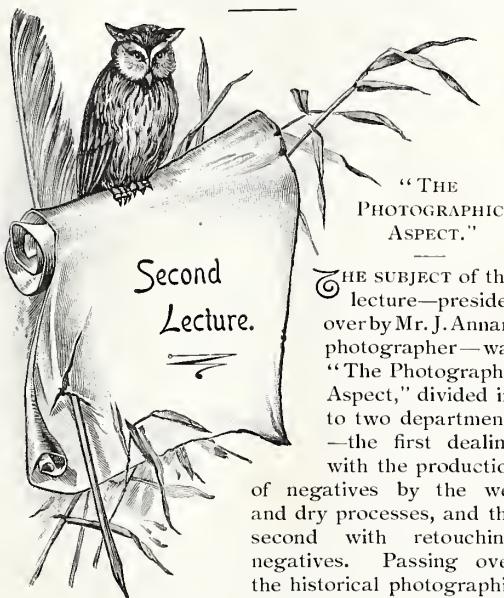
F. G. ANNISON, a British lithographer, has patented a new method of printing, his object being to make posters or showbills waterproof and durable, and at the same time reasonably cheap, and not easily destroyed by rain, fog, and other atmospheric influences. Linen, cotton, or other suitable material of a fine texture is rendered waterproof by being impregnated with an opaque or white solution of xylonite, known also as celluloid and ivorine; or, if the material is required to be used for transparencies, a transparent solution of xylonite is used in a similar manner. The article so impregnated is then passed through a heated chamber to dry it, and also to evaporate the alcohol and camphor. It is then pressed between rollers in order to make the surface sufficiently smooth, and to enable it to take the printers' ink, and then the required design is printed on the material so prepared as in the ordinary method of printing on paper; finally, the printing on the article is covered with a coat of transparent varnish. In pressing the textile material between the rollers, the nap of the material, which otherwise would stick up in little xylonite coated spires, is pressed flat, and the xylonite coating is cracked or broken entirely from the spires. In the same way minute cracks are made over each fibre in which the printers' ink can penetrate. It can thus be made to adhere, whereas, when the xylonite is applied to the surface in the form of a film, it presents a polished surface on which printers' ink will not stick.

Paper and Press.

A WELL-KNOWN caricaturist says that he frequently gets "face-tired." "As I draw," he explains, "unconsciously my face assumes the expression of the people I am trying to represent in a distorted way, and, as a result, at the end of a couple of hours I find myself compelled to rest, not my eyes nor my hands, but my face. I do this either by lying down, or by going out on the street with the determination of spending my time in looking at things and not at people, for I find I study their faces at the expense of my own. I take a keen delight in my work, and that is the reason I suppose that I am so sympathetic with it."

Practical Collotype Printing.

BY W. A. DENOVAN.



THE SUBJECT of this lecture—presided over by Mr. J. Annan, photographer—was “The Photographic Aspect,” divided into two departments—the first dealing with the production of negatives by the wet and dry processes, and the second with retouching negatives. Passing over the historical photographic development, and dealing

with the first branch of the subject, the lecturer at the outset laid emphasis on the importance of having negatives suitable for the process, and as perfect as possible, which it was intended to work. In order that this might be attained, studios, dark rooms, instruments, and chemicals should be of the best as regarded situation, space, make, and purity. The thing to be desired in a studio was good light, and the place so arranged that the light might be controlled by the operator. The two developing rooms—one for each process—should be compact without being confining, well lit with non-actinic light, and well ventilated. The camera and other apparatus should be of the best. For portrait work collotypists should engage a photographer to supply negatives, as he would have all the accessories suitable for that special branch of the business.

After remarking on the changes which took place in almost all organic or metallic compounds in ordinary light, and the consequent illumination of the developing rooms with light filtered through yellow or red glass or cloth, the lecturer proceeded to explain that the salts employed in negative photography were bromide, iodide, and chloride of silver. These salts were usually incorporated in films of gelatine or collodion for the retention of

THE TRANSMITTED IMAGE

by the action of actinic light; and it was the knowledge of the different chemical actions of these agents which gave the operator power, by judicious choice and mixture, to produce negatives. Taking as an example one of the simplest subjects for reproduction, a pen-and-ink sketch, the lecturer described, in detail, the various processes to be observed in the

arrangement and construction of the easel for the reception of the sketch, the focussing, and the coating of the plate for exposure. Three kinds of glass were suitable for negative plates: patent plate, flatted crown, and best sheet glass. The first was most expensive and least liable to break, but the same plate could not be used with success more than three or four times; flatted crown had a harder surface, was slightly curved on one side, and suitable for medium sizes; best sheet glass was cheaper than either of these, answered well for smaller sizes, and might even be used for medium sizes if great care was observed in copying from the negative to the printing plate. Each plate, before being used, must be chemically clean. The substances used in the chemical manipulation proper—collodion, the silver bath (on the purity and strength of which emphasis was laid), the developer, the intensifier—were next touched upon at length, after which, having explained the operation of focussing the image, the lecturer dealt with what was

A DEED OF DARKNESS :

coating the plate with iodised collodion and sensitising, an operation which took from two to six minutes, according to the weather. The plate must be moved about in the bath till the greasiness due to the repulsion of the collodion solvents disappeared, otherwise streaky and tear markings would be seen in the resulting negative. The removal of a plate from the bath should be slowly performed, so that the capillary attraction of the bath solution for that on the plate might prevent the need of draining. Resting the plate on one edge on clean blotting paper, the back should be wiped free of solution, placed in position in the camera slide, and closed in. The next operation, the exposure—which was timed according to light, subject, and process—being completed, the slide was removed to a dark room for the development of the latent image, which operation the lecturer minutely explained. If the negative was good, it should be set aside to dry; if bad, it should be cleared off, and the operation repeated, the lecturer remarking, with regard to the last, that

MANY TRIFLING ANNOYANCES

crept up from time to time, which patience, perseverance, and observation would combat and overcome. Photographs, engravings, and paintings required different treatment as regarded time of exposure, mode of development, and intensification, but the operator soon grew to a knowledge of these things. For outdoor work the dry-plate process superseded the indoor. Dry plates might be bought from the manufacturers in all the different photographic sizes. In this process the sensitive salts were usually held in a gelatine film on a glass support, and the general principle of reduction by actinic light was the same as in wet-plate work. The manipulation differed in detail only, and was in many respects less troublesome than the wet-plate process; while the plates coming from the manufacturer ready sensitised left the operator only the work of exposing and developing. The time of exposure for dry plates was considerably less than for wet, and the latter was about half as cheap as the dry plates, which might account for the use of a much more complicated process. As regarded

the quality of the negatives for collotype, any negative good for silver printing might be used; but the better results were obtainable from such as might be esteemed rather thin for this class of work. The image should be reversed. Ordinary negatives might be used by making a carbon transparency, and from it a contact dry plate. The same end might be obtained by the graphite negative process. Respecting the retouching of negatives, there were some subjects which, owing to defects in lighting, composition, or colour, yielded

FAULTY NEGATIVES,

but here the skill of the retoucher was brought forth. Lead-pencil work on the face, and blue or black on the back of the negative or on the tracing paper, aided in producing a presentable result where it might be least expected; and in water-colours and oil paintings considerable work was put on negatives which, if produced by purely photographic agency, would astonish the artist. In photographing for chromo-collotype, the results, without retouching or doctoring, were extremely poor, and the best results were only attained after considerable working-up by one who knew what collotype would yield in the way of light and shade.

After answering a number of questions, Mr. Denovan was awarded a hearty vote of thanks on the motion of the chairman, and a similar compliment having been paid to Mr. Annan for presiding, on the motion of Mr. Calder, the meeting terminated.

THIRD LECTURE.

"PREPARATION OF PLATES."

MR. GARDNER presided. There was a fairly large attendance of students. The lecturer gave a description and exhibition of the boiler in which the gelatine solution for putting on the plates was melted. It was a simple boiler made of tin, with a false bottom in it. The boiler was so constructed that the cover could be taken off without interfering with the temperature. He then described the stove in which the plates were dried after being gelatinated. It is a rectangular box, with bars of iron running across it at right angles for resting plates upon during preparation. On the top of the stove is a thermometer for gauging the temperature of the heat within. He then gave an elaborate description of the glass plates used for printing. He used ordinary polished plate-glass, and he did not see the necessity for having the best material. Some years ago they were working with plates $1\frac{1}{2}$ inches thick, but he did not think, at present, there was any need for such thickness. The Germans had been in the habit of working with plates a $\frac{1}{4}$ -inch thick in machine work. He believed glass plates $\frac{3}{4}$ -inch thick were sufficient for machine work. He had even worked with $\frac{1}{2}$ -inch plates. It was a general custom among collotypers to grind these plates with the finest flour-emery in a similar manner in which stones were ground for lithographic work. Great care was required in grinding plates, for, if the emery was not purely reduced, there was always a danger of scratching them.

The early workers in collotype printing had great difficulty in keeping the films on the plates during printing operations. When the roller was put across the plate, little blisters would begin to rise and the

plate would be spoiled. After considerable trouble and a great deal of expense they managed to discover the means of causing the printing film to cling to the glass surface. This remedy was the medium which, by a chemical change, so united the printing film with glass that it held firmly. Early workers in copper plates did not require any such medium, as copper had an affinity with chromatised gelatine. There were two kinds of first preparations of plates which might be termed complex and simple.

Under the heading of complex he would class such as had to be prepared with the stove he described. The preparation was a compound of gelatine and albumen, and the plates were coated with this, put into the stove and heated till dry in a temperature of about forty degrees Centigrade. After the plates were dried they were exposed to the action of diffused light, by turning them down on a black board. They were exposed for five, ten, or twenty minutes, according to the light. After the plate had been exposed it was taken to the dark room, and there washed with warm water. He then gave the component parts of a preparation formula. It was composed of:—

Gelatine	60 grammes.
Water	700 "
Ammonia bichromate	10 "
Spirits	10 "

After he had prepared his solution, he filtered it by means of muslin, and levelling up the plates in the box or drying stove, he coated them, leaving them to dry in non-active light.

The lecturer then made a few remarks on the different kinds of gelatine, but he always used Nelson's No. 2, because it was harder than No. 1, and had more lasting results. Some preferred hard gelatine for summer work, and others soft. Soft gelatine he considered was better for winter work than for summer work.

FOURTH LECTURE.

"TRANSFERRING OF IMAGES, ETC."

THIS lecture was divided into three sections:—washing, drying, and etching. Mr. William Carter occupied the chair, Mr. Coghill being in the vice-chair. Mr. Denovan said it was his purpose to deal that night with the transferring of the image, the washing of the plate, and the soaking of the so-called etching. Going back upon the two last lectures, especially with regard to the photographic question, Mr. Denovan said he had then treated of the value of light, its power for reflecting from the image to be reproduced. He also spoke of the instruments used in the process, and had entered somewhat fully into the matter of chemicals. They had also had given them a demonstration of the preparation of the printing plates, with some remarks as to the gelatine used in such preparation. His object that night was to bind together, so to speak, the

PRINTING OF THE PLATES

and the receiving of the image from the negative. The principle of the operation was the same in the negative process as in transferring the image; that was the action of light upon the chemical held in suspension in gelatine. There was something tangible in use in printing by the use of stone as well as on

Biscuit Tint. 0288.

Carminette (registered) 0534.

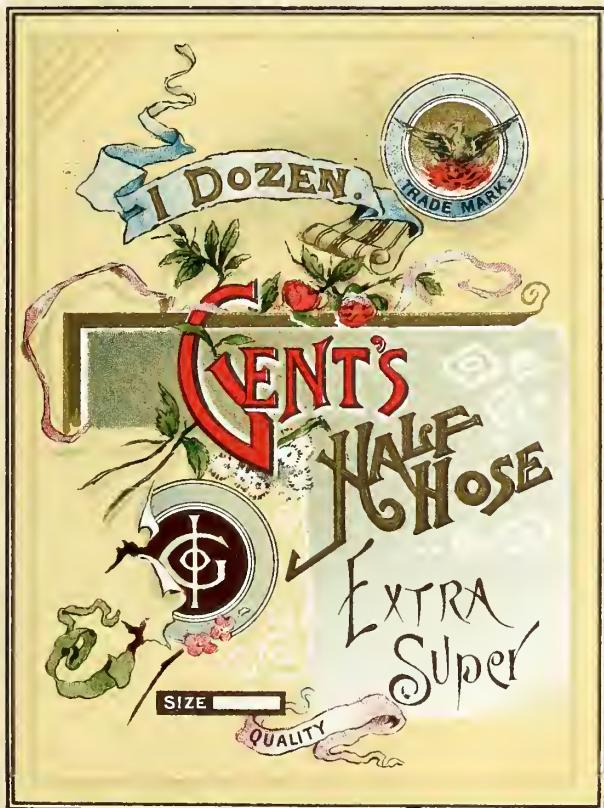
Azure Blue. 0277.

Sky Blue Tint. 0290.

Chocolate, Dark Brown. 0772.

Myrtle Lake. 0685.

Grey Green Tint (reduced) 0155.



DE MONTFORT PRESS LITHO.

Specimen of a Label.

PRINTED WITH MESSRS MANDER BROTHERS' LITHOGRAPHIC INKS.
Works, Wolverhampton.

FOR PRICES OF INKS SEE MANDER BROTHERS' LIST,
SENT GRATIS ON APPLICATION.

paper, but with respect to the collotype they dealt with something different. They could not grasp light. It might be broken up into its seven primary colours, but even then it was a visionary thing. Light was the means used for transferring. It might be artificial or not, light direct on the stone or diffused light. In his experience he had found that it was the force of the light that produced the lasting impression upon the collotype plate, and made it possible to print long runs. A copying frame was used for the transferring process, somewhat similar to that with which he was now demonstrating. Mr. Denovan then explained the method of putting the plate in the frame, stating that it was necessary to "mask" out the edges of the negative with either tinfoil or paper, the former, he thought,

BEING THE BEST

to be used, as by means of it several images could be transferred at once. The most preferable thing to paste down tinfoil or paper was india-rubber solution. During the evening six plates were prepared there, and nearly all of them were good, the chief fault found with them being that there was a great deal of dust in the film. They could understand that that was caused by the occasional opening of the door, and the raps of the feet of his audience on the floor. Two of the plates were here produced, and passed round the class, Mr. Denovan remarking that he had also brought down the negatives from which these plates had been taken. He explained how the negative was placed in the frame. After the negative was taken out it was placed out in the open, and allowed to print. Sometimes that took fifteen minutes, and sometimes a day—it depended on the light.

EXPERIENCE WOULD TEACH THEM

what time was necessary. It was a very difficult matter for beginners to estimate the exposure necessary. Sometimes accidents occurred in doing collotype work. Such trivial things as a grain of sand between the negative and the printing frame would snap the glass. On the other hand, if they did not happen to have a suitable place outside, there might come on a shower of rain, which would swell the wood, with the result that either the printing-frame glass or the negative snapped, and sometimes both. After the plates were transferred they were preferably placed in running water, in order that the bichromate might be washed out. They were left there from half an hour to two or three hours, the time depending on certain circumstances. The plate was afterwards set aside to dry. The next thing was to harden it. There were different methods of doing that. The French used:—water 100 grammes, chrome alum 4 grammes, glycerine 100 grammes; allowed to soak for five minutes. Then came the soaking or etching fluid. That was made up of 300 parts of water, 700 of glycerine, 30 parts of liquid ammonia, and the plates were supposed to soak in that for about an hour. The Germans used 480 glycerine, 150 water, 100 liquid ammonia, and 24 nitrate of potash. The time in use there varied. In the preparation of "soak" the Americans used tobacco juice. He did not think they should introduce any tinting matter into the "soak," and he also gave some advice with regard to the acids which they should use.

Apparatus for Enlarging Drawings.



THE oft-felt wish of many of our artistic readers, to be able to enlarge original drawings without much trouble, has hitherto remained ungratified, but now, says the *Season*, they will certainly rejoice to hear of a clever little invention by which many technical difficulties will be overcome. The leading feature is a rubber band on which a small bead is threaded. As this bead fits so tight that it can only be moved when the elastic is stretched to the utmost, we may consider it to be firm wherever fixed.

One end of the elastic is secured between two metal plates, forming a sort of button, and the other runs into the movable centre of an ordinary pencil case, which turns to prevent the twisting of the elastic when in use. The button, the small original, and the sheet for the copy, are fastened with drawing pins on the drawing board, the two former to the upper left part. Then the pencil is taken in the hand and guided to follow the movements of the bead over the outlines of the original. Curious as the work seems at first, the hand soon becomes accustomed to the involuntary motion and begins to feel as if it were drawing with the bead itself rather than with the pencil, while the effect is both useful and interesting.

The directions and instrument are equally easy, the actual length of the elastic having nothing to do with the proportions; the position of the bead alone determines the size of the copy. Say, for instance, the original measures 8½-in. high, and we wish the copy to be 22-in., all we have to do is to place the pencil at 22-in. and the head at 8½-in. When thus arranged it is impossible to obtain other proportions, whatever the relative position of original copy or paper may be. The above described instrument can, however, only be used for large designs, as the bead embraces too much space to allow of very fine lines, so for photographs, miniatures, small engravings, etc., a somewhat finer apparatus is preferable. By its aid the finest as well as the thickest lines can be produced. In place of the bead we have a piece of metal with a point as fine as a needle, capable of tracing the smallest curves of features; this is fixed between two parallel elastic bands, whose ends are fastened with a spring to two metal discs, ending in the pencil case and the motive power of the needle, otherwise the rules are the same as for the single thread apparatus. The new perspectograph is a patented German invention.

THERE is great activity on the Continent in photo-chromo work, both for type blocks and collotype printing, and the results attained are daily improving. All the experimenters appear to pin their faith on the camera picking out the three primary colours by means of suitably coloured screens interposed between the lens and the plate.

JOHN SARTAIN, the Philadelphia steel engraver, famous for introducing mezzotint into the United States, has just celebrated his eighty-fifth birthday, being in excellent health and as industrious as ever.



New Composition for Transfers.

PATENT FOR EFFECTING PERFECT
TRANSFERS ON STONE.

CHARLES F. HABEDANK, of Jersey City, has just received letters patent covering an improved composition for forming lithographic transfers which he has invented. His object is to produce a lithographic transfer of equal intensity to the original, and not, as heretofore, of increased intensity. The invention is also said to ensure a perfect transfer on stones which are yellow and of second quality.

He proceeds as follows:—The polished transfer stone is placed within a hand-press, and the design, formed in transfer ink upon prepared paper, is placed upon it and transferred to the stone by pressure, as usual. The paper is then dissolved by water, and the stone is washed with clear water and fanned dry. He next covers the stone with a composition of the following ingredients:—Two pounds of water, one pound of partly neutralised nitric acid, one ounce of tannic acid. This mixture is applied with a sponge, so as to uniformly cover the surface, as in gumming. After one or two minutes, during which the composition has been absorbed, and has etched the stone, it is washed off with water. The stone is then gummed, dried, and the gum washed off; the surface being then washed clean with turpentine and water, as usual. The colour is applied by rolls, the stone being rubbed to reproduce the design, powdered with colophonium and etched as usual, when it is ready for printing.

The peculiar property of the composition, as cited by the inventor, is that it will etch the body of the stone only, without affecting the fatty particles of the transfer ink, and thus the transfer will be of the same intensity as the original.

The partly neutralised nitric acid used in the composition is obtained as follows:—To the commercial nitric acid are added small pieces of crushed lithographic stone. The mixture is allowed to stand until effervescence ceases, when the clear liquid is decanted. This liquid will be partially neutralised nitric acid, *i.e.*, nitric acid which will be less violent in its action.

The etching effect of the partially neutralised nitric acid upon the lithographic stone, being less violent than that of the diluted acid, tends to produce a smoother surface and enables the operator to obtain sharper edges of the heavier lines and retain the original sharpness of fine lines without producing rough edges. The action is more uniform over the entire surface of the stone where exposed to the acid,

and soft spots, which occur even in the best stones, are not so much affected.

The tannic acid entering into and being retained by the pores of the stone at all places where the same is exposed, *i.e.*, not protected by the lines of the design, even after subsequent washings, increases the non-adhesive action of those parts toward the printing ink.—*Lithographers' Journal (U.S.A.)*



Manufacture of Bronze Powder.

NEARLY a hundred establishments are engaged in the manufacture of bronze powder in and near the cities of Fürth and Nuremberg, Germany. The article is composed of copper, tin, zinc, and antimony, melted in proper proportions, and cast first into rods of half an inch in diameter and about three feet long, these rods being rolled until about two inches wide and then cut into suitable lengths for handling. The pieces go to the hammers, where they are beaten into a very small fraction of their former thickness, and are then taken to a sulphuric acid bath, where each sheet is washed to remove all impurities, rust, and dirt. After being thoroughly dried, the sheets are again hammered by steam hammers until no further reduction is possible, there being a limit to which machinery can be used. Up to this stage, the treatment which the metal receives, whether intended for powder or metal leaf, is identical; but now the process changes. If designed for metal leaf, the further beating is done by hand; but if for bronze powder, the sheets go to the shears, where they are cut up into small particles and become known as clippings. These are now ready for the stamp mills, which are run in batteries, enabling one man to run or attend fifty or more. When sufficiently pulverised, the powder is sifted in a special manner, the heavier and better qualities going to one receptacle and the inferior grades to another.



INSTEAD of having "run its race" photography is entering on a career of greater usefulness day by day. It is the acknowledged and reliable assistant in every department of science, and the thousands of active, progressive industries of the age. Is it useful? Let the astronomer answer. Let the medical faculty answer. Let the courts of justice answer. Let the publishers of the world's illustrated literature answer. And in thunder tones the reply would come back, "Yes! the world cannot do without it."—BOGARDUS.

IN combining colours, green appears as the all-important factor, as it is the one colour that goes with everything. Green and brown, tan, black, grey, purple, and even blue will be seen, but when undertaking combinations, remember there are shades and shades, and where a yellowish green may jar, a greyish green may harmonise admirably. The new old-rose shades will go with brown, grey, green, black, and purple.



[FROM THE *Manual
Pratique du Lithographe,*
BY A. VALETTE.]

Transposition from Black to White.

. . . FIRST PROCESS. . . .

THE following is our mode of procedure : Take a good proof on China paper of the drawing or letters to be reproduced, not a proof as light as for an ordinary transfer, but, on the contrary, a heavily-printed proof, using a firm ink whether the composition

be a pen work or an engraving. As soon as the proof is taken, powder it rather abundantly with powdered and sifted resin; take a dabber made of very clean carded cotton, and dab the proof slightly with it, to remove the excess of resin that might be injurious to the transfer. Pumicate a stone and polish

it with salt of sorrel, absolutely the same as for an engraving, gum it, and allow the gum to dry. It would even be advisable to prepare the stone beforehand, as the longer it remains ungummed, the better will be the fineness that can be obtained on it; loosen the gum and wash the stone clean, let it dry, and then proceed to make the transfer as usual. Great precautions should be taken in raising the China paper when the transfer is made from the stone; be careful not to wet it too much to soften it; wet it two or three times only on the back, being careful to avoid the water penetrating underneath. Dry the stone with the fan, then cover it with a new layer of pulverised resin; allow it to rest for ten minutes, and powder it again, this time with very fine isinglass or bronze powders. Treat the stone with a very weak acid, free from gum, about four per cent. of acid in a litre of water. This operation requires great precautions. Obtain a very clean carded cotton dabber, entirely new, to avoid the rubbing. Some treat their composition with wine or vinegar, but we prefer the nitric acid, which opens the pores of the stone more, and with, perhaps, less risk of burning it; we do not always know the degree of acidity present in the wine, while the nitric acid sold in the market is always about the same. When the stone has undergone this operation, take some soft or blotting paper and apply it to the stone so as to remove the acid without rubbing the stone; then, when the stone is thoroughly dry, wipe it slightly with a very soft linen

rag to remove all the light particles that the isinglass or the bronze might have left thereon. Reserve the borders of the stone by gumming them, and pour some lithographic ink on the transfer, using a brush to spread it evenly. Allow the ink ten minutes' rest, not longer, and then carry the stone under a water-cock, opening the latter to wash off the ink with abundant water without rubbing it; then gum the stone, and bring out the composition with turps, but raise it in blank; ink it firmly and almost without ink. In case the composition should come out a little veiled, gum it again and raise it with the essence of turpentine. It is necessary that the drawing should come out slowly, and to this effect a roller entirely free from ink must be used. When the composition is pure and you succeed in obtaining it very black, put a little firm ink on the roller and ink heavily; resin it and prepare the same as for an ordinary transfer.

. . . SECOND PROCESS. . . .

Take a heavy proof and resin it as above; take a pumiced stone and prepare it with a weak acid of four or five per cent. in a litre of water; then dry the stone thoroughly and proceed to make the transfer as usual with a dampened proof; wet the back of the China paper, and when it is entirely decomposed raise it, taking the necessary precautions to prevent the water from getting underneath. Dry the stone completely, being careful not to rub it; resin it with clean cotton; take another cotton dabber and wipe it off to remove every particle of resin. This operation must be done very delicately to avoid scratching the composition. Throw on the drawing or the letters some lithographic ink, the same as in the first process; raise the composition with turps, and mount it with the same precautions as above. We have obtained about the same results with this process as with the preceding one; we have noticed, however, a greater tendency to impasting in mounting (or bringing out) the transfer. This result is due only to the difference in the preparation of the stone. By preparing it with the gum and the salt of sorrel we may be sure that the lithographic ink will not take, while by preparing it with the nitric acid it often happens that the ink, if it is allowed to dry a little, will penetrate to open pores of the stone, and it is then difficult to get rid of. We have carried out the two modes of procedure with a colleague as intelligent as he is modest, though we have not been able to account exactly for results which have, on the other hand, been submitted to the appreciation of numerous fellow-workmen.



WE have received another elegant volume—the second volume of THE BRITISH LITHOGRAPHER, and the refined art of printing properly has some of its best examples in this volume. Not only are the pictures nice, but the letterpress is nice too. The whole work is a monument of care and skill, which Messrs. Raithby, Lawrence & Co. ought to be proud of. No doubt they are.—*Effective Advertiser.*

Some Hints from "Process Work."

LT SEEMS likely that by and bye we shall dispense with the mechanically ruled screen altogether. At the Military Geographical Institute, Vienna, experiments have been made which show that a very good grained screen may be obtained from the puckered grain of a collotype plate. But as it is difficult to prepare a perfectly even grain on a large scale, the plan has been adopted of making a small plate of the greatest possible uniformity, and enlarging it to six or eight times the original size, then transferring it to a lithographic stone, retouching it with ink and graver, and making as many transfer prints from it, to be joined together on a large stone, as to secure an original plate of the dimensions suitable for any kind of reproduction. Curiously enough, one of our correspondents told us, before we had heard of this, that for a long time past he had been engaged on the idea of making screens with the reticulated collotype grain, and he showed us some really admirable specimens of work by his process.

But what was running in our correspondent's mind was no doubt a process of which a brief outline was given in the March number of the *Practical Photographer*, called the "Adamantine" process. This was followed up by details of a process of the same kind in the April number. It has long been evident that the Americans had got hold of a new half-tone process which was capable of giving astonishingly fine results, and here it is. The principal feature of it is the incorporation with the bichromate solution of a proportion of gum or glue. After printing and developing, the plate is exposed to a great heat, which converts the image into a very hard enamel, quite impervious to acids.

WHATEVER the state of things may have been a few years ago, it is all "fudge" now to talk about the superiority of Continental process work. Give English firms as much time to do the work as is taken to send the jobs abroad, and there will be nothing lacking in quality. Those pettifogging customers who only allow their "rush" work to be done at home, and give their best to agents of Continental firms, would probably not believe it, if they were told, that some of their orders, instead of being sent away, are actually done by English firms in England. Yet such is the fact. We counsel all English firms to put their name on every block they do, no matter who it is for, and to decline to be a party to any arrangement for leaving it off. This will effectually stop such practices as we have indicated, as it is difficult to erase a name from a half-tone block.

COLOUR work appears to be fascinating process experimenters just now, and numerous methods are being put forth, but they all resolve themselves into the three-colour system, that is of picking out the three primary colours by means of three exposures through suitably coloured screens. The screen for blue must be orange, for red it must be green, and for yellow, violet. The difficulties of the processes may be imagined when it is remembered that the image

has to pass not only through the mirror and lens, but through the colour screen and finally through the line screen. Isochromatic gelatine dry plates have to be used for the blue and red impressions, and a wet collodion plate for the yellow. Single line screens, it is generally admitted, are requisite for the process, each colour crossing at a different angle. Professor Husnik has, however, published an example with dot work. The dots are very open, and the different coloured dots instead of overlapping each other in perfect register are thrown just a little out and thus fall between each other or partially overlap. Thus the moiré effect of cross-lined screen colour work is overcome.

COPPER etching is daily becoming more popular for half-tone work, and with good reason, for the advantages of this metal over zinc, both from the etcher's and the letterpress printer's point of view, are obvious. The only drawback is the enhanced cost of the metal. That, however, should be compensated for by the saving of time in etching, and the higher price which should be commanded by reason of its better quality. The perchloride of iron etching solution is much more manageable than nitric acid, and the necessity of using the hydrometer prevents the etcher relying on rule-of-thumb work, which is too often the cause of much waste of time and material, though the old-fashioned process worker will never admit it.

AS COPPER plates are very apt to become tarnished, a wrinkle as to cleaning them will come in useful. Heat the plate and pour on some spirits of tar, rubbing with a soft brush. Another way is to immerse the plate for a few moments in a warm solution of common potash, then rinsing it and rubbing with chalk moistened with a little water, finally polishing it till dry.

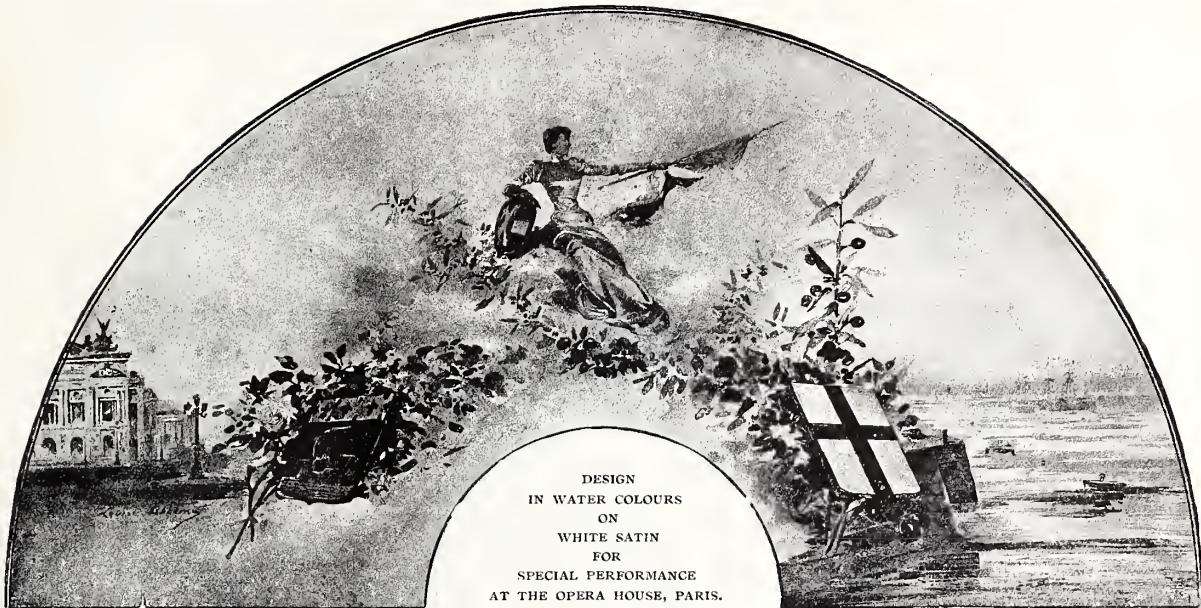
ONE cannot look over lists of new patents without feeling conscious of lost opportunities. We have just seen a notice of a patent having been taken out for stereotyping with asbestos sheeting as a flong. Six or seven years ago this struck us as a brilliant idea, and we tried it with successful results. But the serious business of acquiring "bread and butter" in the ordinary way being a primary consideration, the idea was allowed to "slide" like many others, which other people have since thought of, and have got credit for.

A NEW method of mounting zincos and other plates has been patented. Strips of wood are placed in a stereotype casting box of a particular shape, and metal poured around them so that the wood becomes enclosed in a frame of metal, and is thereby prevented from warping and shrinking. Thus the resistance of a metal block is combined with the facility of easily nailing on the plates. But why go to all this trouble? Long ago someone suggested the idea of taking a solid metal block of suitable height, drilling here and there holes of about a quarter inch diameter, and driving into these holes pegs of wood so as to form a place to drive the nails to. Even more simple is the plan often adopted of driving the nails direct into the metal. It can be done if you drill a hole smaller than the nail, and then punch the nail into it.

PRINTED WITH A. B. FLEMING & COS' CELEBRATED LITHOGRAPHIC INKS.
Works, Caroline Park, Edinburgh.



PRINTED WITH A. B. FLEMING & COS' CELEBRATED LITHOGRAPHIC INKS.
Works, Caroline Park, Edinburgh.



Artists and Printers and the Franco-Russian Fêtes.

OCTOBER, 1893.

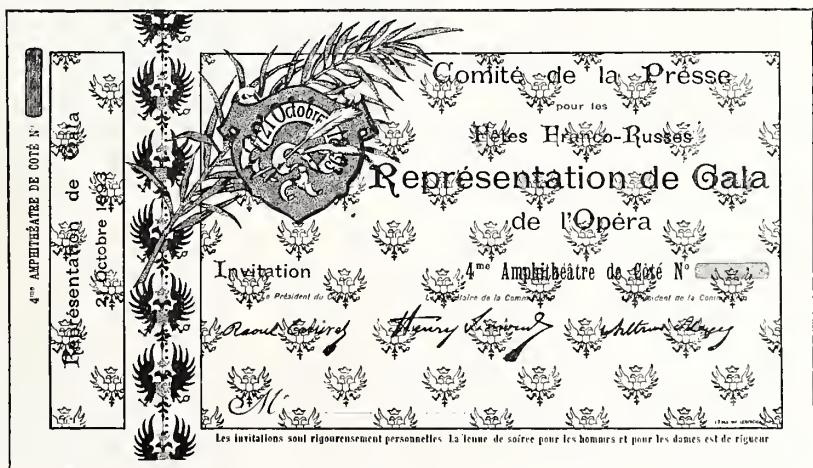
THE important Franco-Russian celebrations afforded an exceptional opportunity to artists, designers, and printers to show their skill and originality in providing menus, programmes, and souvenirs specially to celebrate the occasion. Proportionate to the enthusiasm developed, so the designs and printed work show much freshness and originality, as well as novelty and appropriateness. With the object of showing what our confrères have done, the following notes and criticism, with some illustrations of the most striking and pleasing features, have been translated from our Gallic contemporary, the *Revue des Arts Graphiques*.

The national taste is shown in the production of many charming compositions—happily termed “bibelots.” For these, almost every known process of reproduction has been called into use, and a collection of the results forms an interesting representation of present-day Gallic art. The predominant desire has been to provide something novel. No particular style has been copied—not even the elegant Louis XV. or the frightfully bombastic Louis-Philippe designs, or the chromo-lithos of the Second Empire; ingenuity and taste have been allowed to work hand in hand, with the result that the usual French typographic composition and careful yet simple black prints give way to an abundance of gold, bronze, shot colours, paper ranging from ordinary white to a rich Japanese, and sparkling satin, mosaic morocco, plush, and aluminium. Much friendly rivalry has been evinced in the production of these souvenirs, and it must be remembered that all were under

the printers' frequent disadvantage—want of time, and it is to the credit of artists, engravers, and printers alike that some of the best work was produced in remarkably short periods.

The various productions may be taken in two classes, the one governmental and the other municipal and special; the former not previously bearing the palm for best work. Under government auspices, simplicity is *de rigueur*, but in this case it is not particularly flattering to the nation to note the flat compositions satisfying the first magistrate of the Republic and the Grand Master of the Legion of Honour. These remained content with designs including French and Russian flags and the “C” in relief at the top.

Less commonplace is that of the Minister of War: on the front cover a cuirassier, with background of standards and lances,



“PRESS” INVITATION CARD.

salutes the Russian navy; a maritime view forms the background and the side is occupied with the arms of the two countries, bound by an anchor. This menu looks well in a rich green and brown, the figure of General Loizillon at the right-hand top corner, in gold in relief, with his device, forms a harmonious combination.

The menu of the Minister of Foreign Affairs falls very short of the preceding one. The designer must have been an *habitué* of the cheap restaurants, from the menus of which the design has evidently been conceived. The long card, with exaggerated view of the house and ordinary tabular form, is all there. In this case, the headpiece is a view of the Quay d'Orsay, and one almost expects to find the usual footline as on French menus, "Pain et eau de Seltz à discretion." A careful examination is required to discover that it is a breakfast given by a Minister.

That of the Minister of Marine is a novelty worthy of commendation: the right-hand top corner contains an anchor joining Russian and French standards. But here the flags are not conventional, they really float, and are *not*, as it were, cut out of tin. The effects of relief and colour are surprising, and, as an *aquarelle*, the Parisian industry has to be congratulated on this dainty specimen.

The menu provided by the City of Paris authorities for their formal dinner to the Russian officers is a right royal production. The cover is in vellum and red morocco, with corner-pieces of gold, including the arms of the two nations entwined in laurel. The interior is a moiré blue and contains the city arms in relief in colour. The whole is charmingly designed and tastefully executed, forming a great contrast to the menu of the famous banquet given by the municipality in 1889 (see p. 85.)

The provinces were in no degree behind the capital. During the fêtes, Lyons was particularly distinguished for the splendid productions issued for the occasion. The menu for the Prefecture of the Rhone represents a standard of white silk, bearing the Cross of St. Andrew, the reading matter, in Russian and French, being enclosed in a design including a sea view, an allegorical group, and view of the Prefecture itself. From either side float tricolour ribbons which meet at the head, supporting the figure of a lion. This is a remarkably pleasing design.

The menu of the municipality of the same city is worthy of note. Of the portfolio character, the cover is of yellow satin, bearing the arms of the city and the date in a banderole on the cover. The interior includes the text, printed in blue and red on parchment. This occupies two pages, each enclosing the arms of Lyons and Russia, interwoven by branches of oak and laurel. Perhaps if the design had been somewhat simpler, or not so full to the page, the effect would have been enhanced. With these pages was included an album of souvenirs of Lyons in monochrome.

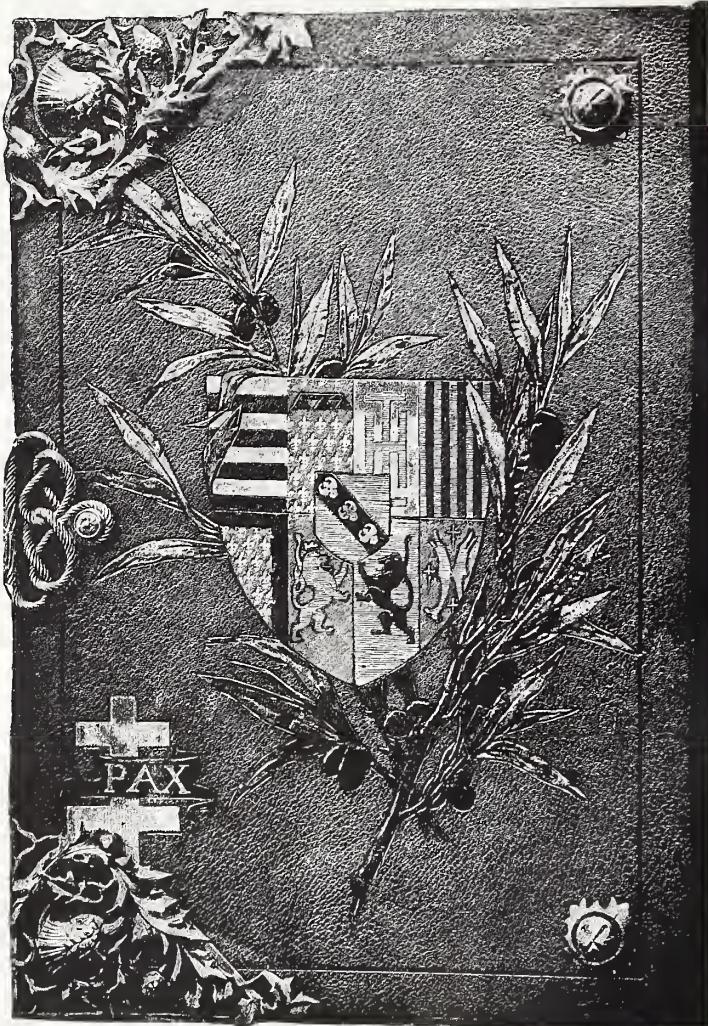
Marseilles runs Lyons closely in taste and originality. The menu bears the arms of the town draped with the flags of the two nations, and above these, on blue moiré ribbon, are the names "Cronstadt," "Toulon," "Paris," "Marseilles." Pendant from this ribbon is a medal bearing the two coats of arms—a pleasing souvenir.

Toulon has been specially privileged during the festivities, and to enumerate the series of cards and programmes specially designed for the occasion would take some time. The favourite styles have been variations of an attractive design including the Cross of St. Andrew in a faint blue tint, and the rest of the design in colours.

The invitation cards are of a much more commonplace character, and, with the exception of that prepared for the Opera Gala (see p. 81), provided no particularly striking or novel features.

The programmes afforded greater scope for display, and some pleasing effects were obtained. The Minister of War has two programmes: the first was for a concert given by the band of the Republican Guard and is simple in character, worked on Japan paper, with the figure of General Loizillon in the corner, done entirely by letterpress. For the military tournament the programme was very appropriate, and tastefully printed in blue and rose colour.

The programmes of the City of Paris and the Hotel de Ville are very taking, the latter including the arms in colour, bound in vellum,



One of the best of the programmes was that prepared for the special opera performance at Paris. This is also an *aquarelle*—a female figure in white satin personifies France, one hand rests on the national shield, the other waves the colours. Entwined by leafy sprays the colours of the two nations rest at the foot on either side. On the right is a maritime view with war vessels, and on the left a portion of the façade of the Opera House. Reproduced from a water colour, our illustration at the commencement of this article gives but a bare idea of the charming effect of the original.

The press committee received splendid heliogravures of the Czar, by M. Paul Nodor.

In the "Livre d'Or de la Lorraine" (The Golden Book of Lorraine)—see this and opposite pages—the critic of the various productions

specially issued during the recent Franco-Russian fêtes at once sees that he has before him work of the highest class, and of a truly artistic character. As an outcome of patriotic effort, and the amicable and emulatory feelings engendered between the two nations, this volume, both in contents and cover, is worthy of all praise, and highly creditable to French workmanship. The contents include

"La Lorraine à la Russie" are in raised gold letters on chocolate ground, with transverse armorial band in red. The broad transverse band across the cover bears three large silver alerions.

The design on the other side is by C. Martin, and shows the Lorraine shield as a centre-piece. This is worked in colours, the olive branches entwining it being also in two greens—the different shades of leaf and fruit. In the lower left-hand corner, on a red pennon, is the word "Pax" (peace) in gold—accentuating the olive-branch symbol of peace.



"THE GOLDEN BOOK OF LORRAINE."

a preface by M. Mézières, of the French Academy, and souvenirs from the Communes (1,713 in number), and from the various societies and journals in the three departments. There are sixty original illustrations in crayon, pencil, pen-and-ink, and water-colour, by well-known artists. The text throughout is given in both the French and Russian languages. The binding is the work of three Lorraine artists: René Wiener, Victor Prouv , and Camille Martin. The design is worked on citron-coloured morocco—the colours of Russia and Lorraine, and forms a mosaic of various coloured leathers intersecting throughout, following the design and setting as by pyrogravure, with admirable effect.

The front cover is by Victor Prouv , and includes a female figure, a blonde, in a violet-coloured dress, presenting a pansy. The words,

The thistle—the Nancy emblem—occupies the corners, while the clasp is in the form of an alerion, the whole of the metal being in oxidised silver, the work of a Nancy goldsmith.

As a commemorative of the festivities and the friendly feelings displayed, no less than as a specimen of work produced by the province, the album cannot fail to do Lorraine infinite credit, and the Livre d'Or will be prized wherever its ultimate destination may be.

We are indebted to the *Revue des Arts Graphiques* for the blocks illustrating this article.



Photo Lithographic Processes

COLLOTYPE—(continued).

CHAPTER XVII.

HALF-TONE LITHOGRAPHY BY A COLLOTYPE METHOD.

LIN CHAPTERS II.—VII. (B.L. Nos. 3–6), the subject of half-tone lithography was fully dealt with so far as it was possible by using either the stone or paper as the support for the film; but there is a method of half-tone lithography which, if necessary, can be practised by the intervention of collotype as a basis. This process gives much better results and is a very much closer approach to true half-tone productions than any of those previously described. The determination to use this process depends upon the cost which may be incurred in the production, the initial stages of the process being in every way as costly as collotype itself; only in the printing process is there any economy of working.

In the course of the last three years, various methods have become more or less known by which this process of half-tone lithography through collotype can be executed. The more recent method is that in which the glass plate is prepared exactly as already described for collotype films; it is then treated with a substratum, as already fully described, and is lastly sensitised by a film of gelatine, bichromate of potassium, etc., prepared as follows:—

Gelatine	1-oz.
Water	3-oz.

After well soaking, bring the gelatine into a state of solution by the application of gentle heat, as already described—not by direct heat, but by the heat of surrounding water in an outer vessel. When this solution is in a limpid condition, add slowly in succession: (1) $\frac{1}{4}$ -oz. of bichromate of potassium, (2) 1 dram of calcium chloride, (3) 30 grains of ferricyanide of potassium, keeping the liquid well stirred all the time. After the other ingredients are well mixed in, add five drops of acetic acid. Before use, this gelatine sensitiser must be well strained, and to effect this with ease the vessels used must all be very warm; the straining can be effected through muslin. The sensitiser must be kept in a warm vessel when about to be used, and poured on the plate through muslin; the quantity for a 12×15 -in. plate being $2\frac{1}{2}$ -oz. The plate is then dried in the drying cupboard, at a temperature of 130° F. (43° C.). The drying at a certain temperature

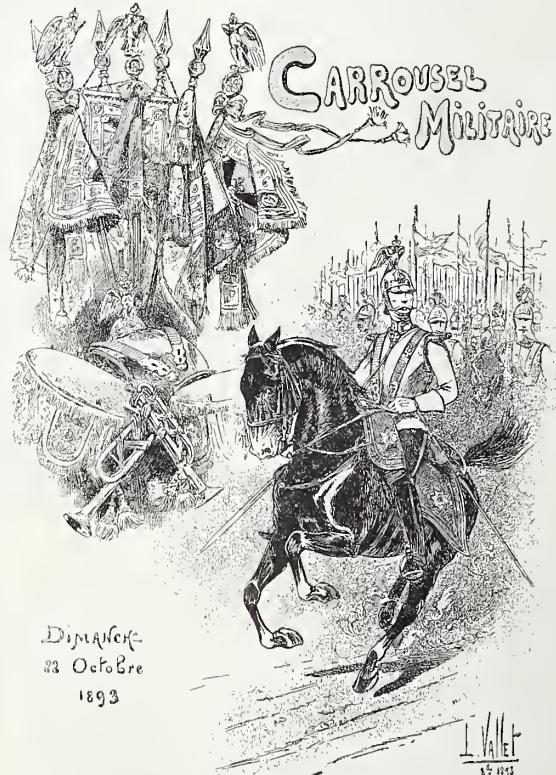
is all-important; if it be dried at a lower figure, say 110° F. (34° C.), the grain produced will be mealy and not sufficiently decided in character to allow for obtaining a transfer open enough to transfer to polished stone. But at 130° F. the grain or reticulation takes a decided geometric form, not unlike the well-known fine grains of Maclure & Macdonald's grained papers for chalk work.

Reverting to the preparation of the film for this half-tone photo-lithography through collotype, the older method is to prepare a stock sensitising jelly of:

Gelatine	2-oz.
Water	8-oz.

to which, when in solution, is added $\frac{1}{2}$ -oz. of bichromate of potassium in a fine powder, well stirred in. When required for use take $2\frac{1}{2}$ -oz. of jelly and melt it in a clean jar. It must be kept warm whilst a second solution is stirred into it. This second solution is prepared by mixing into hot methylated spirit (10-oz.), gelatine (two drops) and saturated solution of ferricyanide of potassium (ten drops). Both solutions are kept very warm, and the spirit is added very slowly, so that its action does not cause the gelatine to coagulate. If it should coagulate, it is useless and must be thrown away.

The foregoing details of the sensitising mixture constitute the real difference between the older and more recent methods. The after processes and preceding preparation are almost identical. In the



PROGRAMME OF THE MILITARY FESTIVAL.

(From photogravure by M. Mauge).

[See p. 81.]



ANNUAL DINNER
Nov 24 1893.

Nottingham Branch
OF THE
AMALGAMATED SOCIETY
OF
LITHOGRAPHIC ARTISTS &C

CUINTON ARMS
HOTEL.



MENU

Printed by W^m Allen & Co^{rs}.

Chromo, General.

& Collotype Printers

Butcher St Works, Nottm.

All Trade Orders confidentially
& promptly executed.



Printed on Potter & Co's Celebrated Chromo Paper
with W. Ehrmanns Brilliant Gold Bronze.

Printed with Messrs Gilbu & Herrmann's Special Bronze Blue Lithographic Ink

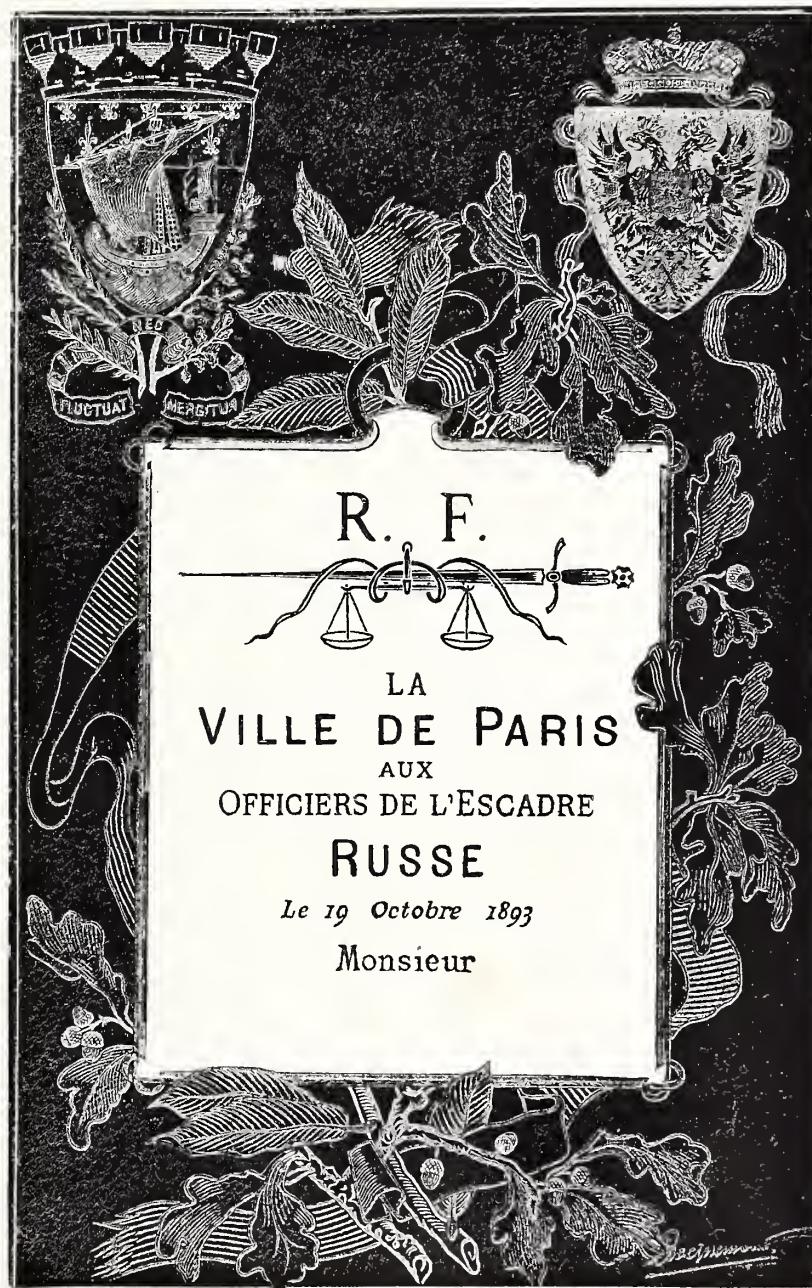
older process the heat for drying may go above 130° F., as far as 150° F.; but in any case it must be borne in mind that great heat hardens the gelatine film and practically decreases its sensitive nature. When the film is hardened by excess of heat, it is liable to take ink all over in printing.

The film being prepared, it is placed under a good reversed negative and printed as for all other photo-mechanical processes.

The time of exposure must be somewhat prolonged to secure the printing of all the details. The edges of the film must be masked carefully with brown paper. After printing, the plate should be soaked in a solution of borax for five or ten minutes, then washed in frequent changes of clean water to wash out the bichromate of potassium. When that is effectively removed the plate may be allowed to stand to dry. If the bichromate be not removed, then such parts as still contain any of it will harden in the light and take ink the same as the exposed portions. After drying, the plate is in the same condition as an ordinary collotype film, and for printing must be soaked in cold water some three hours or more, carefully etched in one of the collotype etchers, as described in the previous chapters, then placed in the press and a transfer pulled from it. The rolling up can be done with a good lithographic chalk printing roller, followed by rolling up with a glue roller sparsely charged with a thinner transfer ink, and the transfer taken in a good retransfer ink. The transfer may then be put down to polished or grained stone—polished stone for preference. The polished stone retains the grain of the reticulation, whilst the grained stone destroys such granulation to a very considerable extent. After transferring, allow the transfer to lie upon the stone some time,

and, after clearing off the paper, gum up and allow it to stand for a few hours before rolling up.

The transfer paper used should be one which is soft enough to be well pressed into the reticulation of the film, and not so soft that when damp it runs into a paste on the stone. A paper having a fairly thick composition upon a good printing paper will prove to be the best. [To be continued.]



MENU OF THE CITY OF PARIS, DESIGNED BY M. BRACQUEMOND AND EXECUTED IN MOROCCO MOSAIC BY M. PAGNANT.

(Photogravure direct by MM. Verdonx, Ducourtieux & Huillard).

[See p. 82.]

A Photographer's Experiences in Photo-Lithography.

[Given before the Photographic Society of Great Britain,
and reprinted from *British Journal of Photography*.]



PHOTO-LITHOGRAPHY is applied with special advantage in the reproduction of a subject where only two tones, as black and white, without intermediate gradations, are required. True, there are photo-lithographic processes in which the half-tones of the original are broken up into a kind of grain, which gives the idea of half-tones, as do the fine lines of an engraving. The present paper and demonstration will not include these processes, nor be concerned with many of the variations that have been made in the practice of photo-lithography; but an endeavour will be made to clearly show throughout a practicable working method, such as the writer has used with success, and, in the main, such as he has known to be employed in printing works turning out large quantities of excellent work.

The first thing necessary in photo-lithography is to have a negative, the shadows of which are really clear. It is also desirable to have dense lights, but this is not essential. Wet collodion is recognised as being the best negative process for that purpose, though, for coarse lines from a clear black and white original, some gelatine plates may be made to serve. I always use wet collodion, and I believe that to be almost the universal practice in commercial establishments. It is of course much easier to get a suitable negative from a pure black and white subject than from one in which blacks and whites are deficient in purity; and some establishments insist upon having a drawing made with Indian ink and on Bristol board. However, it is often necessary to copy a subject which presents greater difficulties. I have here a letter more than twenty years old, written to me by a well-known artist. It is rather soiled and creased, and the ink (which, of course, was of the ordinary kind) has faded in parts. Illustrating some of the words is a pen sketch, which I have selected as the subject for the demonstration. Of this I have made two negatives (wet collodion). One, which is of full intensity and shows the paper as of fairly solid opacity throughout, looks, to those not aware of the special quality required, to be the better. It is, however, a full half-tone negative. The lines where the ink is still black are transparent, but in other parts, where the ink has been thin or has faded, there is a good deal of deposit. Such a negative is not suited for the present purpose, for although by deep printing on the sensitised transfer paper the faint lines might be made to show, there would then be a spreading and thickening of the more transparent lines. The second

negative, which is of the kind required, shows the lines throughout as clear as the margin. The white of the paper is not so good, every soil and irregularity shows strongly, but these can be masked out; or, if they print sufficiently to take the ink on the transfer, can easily be cleaned off the stone.

PREPARATION OF THE PHOTO-LITHOGRAPHIC TRANSFER.

Paper prepared with gelatine for photo-lithographic transfer is an article of commerce, but, if preferred, can be made at home. The paper should be of firm, good quality, or it may split up in manipulation. Gelatine such as is used for photographic emulsion, tolerably hard, may be swelled in water, and dissolved by heat. The strength may be conveniently one to ten, and the solution must be warm enough to allow of easy flowing. Floating in a dish is best, but means must be taken to keep up the heat during the time the requisite number of sheets are being floated.

The paper is sensitised by immersion in a bath of bichromate. Bichromate of potash is generally used, and it has been recommended to use a solution nearly saturated, about an ounce and a half to the pint. I have more generally used a rather weaker solution, about an ounce to the pint, and have even got good results with half that strength. The objection to a very strong solution is the rapidity with which the paper goes bad. It is generally advised to add ammonia to the sensitising bath until the deep orange colour becomes changed to a yellow. I have not found this an improvement. When the paper is softened in a bichromate solution, it may be hung up to dry; but a plan which I much prefer is to squeegee it on to a sheet of talced glass, and leave it to dry there.

There are several advantages about this method:—

1. The surface is fine and smooth, and the paper may consequently be pressed into more intimate contact with the negative.

2. For the same reason the ink may be applied more evenly, without having to be forced into the depressions of the grain of the paper.

3. The sensitised surface of the paper is kept out of contact with the air whilst drying, and until it is required, when it may be stripped and taken direct to the press.

4. The paper being dried in an expanded condition, and applied in that state to the negative, there is very little, if any, distortion from expansion of the paper by moisture when applied to the stone.*

The objection that I have heard raised to drying on talced glass is that there is a tendency for the paper to stick, and, in short, to refuse to strip. I have never known this occur since finding that ease of stripping depended entirely upon a vigorous rubbing in of the talc. Take a little powdered talc (French chalk) and with a cloth rub a clean glass hard until the surface appears to be matt nearly all over. It may afterwards

* To make up for this distortion, it is customary with some photolithographers to take the negative somewhat smaller than is required for the finished print; but then, as paper expands unequally when wetted, it will be necessary to note which way the paper is to be cut, and even then the result will only be of the required size in one dimension, and will exceed or come short of it in another.

be rubbed until polished again, but the effect remains. The grain of the matt is so fine that it is of no consequence, and the plate may be used many times in succession without any further rubbing or application of talc being required. All loose talc is, of course, dusted away before use.

The paper, stripped from the talced glass, is printed from the negative in the usual way. The exposure is not long, and may be judged to be sufficient when the lines show as a clear brown on a yellow ground. The ground may even print through to a certain extent, as a faint image may be made to part with the ink whilst the stronger parts retain it.

INKING THE TRANSFER.

The print taken from the negative is covered with a thin film of transfer ink. This may be done in various ways. A very good plan is to roll up a lithographic stone with a thin film of ink, and then lay the transfer on it and pass a few times through the press, reversing the stone to ensure equality of pressure. Another plan is to roll on to the transfer paper direct. The end of the paper may be turned over the edge of a piece of glass so as to reach the back. The glass is then laid on another glass, and so the paper is held during the rolling. In either case the first thing is to get a thin, even coating of ink upon a roller. A special ink is used, containing a large proportion of fat. It is sold as lithographic transfer ink, and being very stiff requires a little thinning before use. For this purpose lithographic varnish is commonly used; some, however, take a fat oil, such as palm oil, and others turpentine. The diluent, whichever it is, is worked up with the ink by a palette knife on a stone, and then by repeated rolling the stone and the roller are evenly coated. It is desirable that the coat of ink on the transfer be thin, or the fine lines may hang together. The image should just show through the ink.

The roller used is an ordinary lithographic leather roller, which, however, should be of fine texture. For very fine work some use a velvet roller.* Small subjects, and indeed larger ones if time is not an object, may be coated with ink by a pad of linen† or other rag merely, and the use of a roller may be dispensed with until the transfer is on the stone. The pad should be first dabbed with a little ink on a stone or piece of glass until it will distribute a thin, even film of ink.

PLACING THE TRANSFER ON THE STONE.

When the transfer is inked, if turpentine has been used as the diluent, it is left for some time, say twenty minutes. With other diluents it may be proceeded with at once. It is laid in water, or merely floated on, face upwards. This is perhaps the best way, but then no water should be allowed to get on the face in parts, or these will be less strong in the image than the rest. When the gelatine has absorbed sufficient moisture (which can be told by the unexposed portions being raised a little above the lines), the transfer is laid on the slab, held down as before described, and

the roller passed over it a few times. The ink will now, for the most part, leave the whites, and the blacks will be strengthened. The transfer is next sponged with water until the spaces between the lines are perfectly clear. Sometimes the rolling off is omitted, and sponging alone is relied on. The transfer is then partially dried and put on to the stone, or, as is often done, it is dried and damped again by placing it in a moist blotting book. The transfer is best put on to the stone the same day as made. If kept several days, it may refuse to take properly. The stone, having been cleaned and polished with snake-stone, used with plenty of water to prevent scratching and dragging, is, after drying, and sometimes slightly warming, laid on the bed of the press. Warming is necessary if the stone is colder than the air of the room, as in that case a film of water may be deposited. The damp transfer is put in place face downwards. Some thicknesses of paper are placed on it, and it is then passed a few times through the press, the stone being reversed and the back of the transfer redamped half-way through the process. A corner is lifted to make sure that the impression has taken well on the stone, and then, after damping the back of the paper, it is pulled off entirely. If there is a difficulty, warm water is used. The stone is sponged, and then gum water is rubbed all over. This helps to keep the whites clean, and the lines from spreading. The gum water should be allowed to dry, and then the stone is sponged, and ink from the transfer is reinforced by rolling, or rubbing with a pad, with ordinary lithographic ink slightly thinned with varnish or turpentine. If a pad is used, enough ink should be taken up to show as a smear. Before touching with the pad, thick gum water is poured on to the stone, and rubbed in at the same time that the ink is strengthening the deposit on the lines.

PREPARING THE STONE.

The stone has to go through a process called etching, which, however, does not dissolve it to an appreciable extent, but cleans it up. Before etching, the image is protected by being dusted over with finely powdered resin. The excess of resin is lightly dusted off, and the surface of the stone is sponged. If there are any blemishes in the way of ink on the stone where not wanted, they can be removed at this stage by a scraper, or a narrow slip of snake-stone. Sometimes powdered talc is used instead of resin. The etching fluid is a very dilute solution of nitric acid. The strength of the acid is determined by its effect on the stone. If effervescence takes place in from five to ten seconds, the acid is about right for strength. After sponging off the acid the stone is again gummed and dried.

The stone is now again sponged, and the ink, which has been clogged by the resin or talc, is washed off with turpentine. The stone is again sponged clean, and, a little thick gum water being first poured on, the image is partly brought back by rubbing with a pad of linen that has been touched on to the inky slab. The stone is once more sponged clean, and wiped with what is called the damping cloth, which, as its name implies, is always kept damp enough to leave the stone moist. The damping cloth is a material of a soft muslin

* The velvet roller has been shewn to be only a very poor accessory, and not worth using.

† A sponge is even more suitable.

character, without any dressing in it. What is called butter cloth, such as is sold for the purpose of wrapping round rolls of butter, is suitable; enough to make a good handful—say, a yard—is sufficient.

PRINTING.

The stone is next inked up by rolling with the ordinary lithographic ink, slightly thinned with lithographic varnish. The amount of ink left on the image may be regulated by the thickness of the coat on the inking slab, by the dilution or softness of the ink itself, and by the manner of rolling. Heaviness and slowness of rolling deposit ink freely, whilst lightness and quickness tend to remove it from the stone and clean up the lights. A piece of paper is laid on, the tympan lowered into place, and the print made by pulling through the press. The first print may be a little weak, and yet, after about a dozen pulls are taken, it may come up of full strength.

After each print is pulled, the stone is damped again before re-inking. Wiping with the damping cloth is generally sufficient. If the stone itself appears to take the ink in places, rubbing with a sponge will generally clean it; but, if there is a difficulty, clean it off with turpentine, and, after sponging with water, bring back the image by rubbing with a cloth charged with thinned ink as before directed, taking care that there is also some thick liquid gum on the stone.

Of course the assistance of a practised lithographic printer will save some failures, and be of great use during the first essays in the printing part of the work. It would be perhaps as well at first to confine oneself to making the negative, and from that the photo-litho transfer, and hand the latter over to a lithographer for printing from. If only one or two prints are required, it may suffice to make the photo-litho transfer, and consider that as the final result. At all events, this will afford good practice for those commencing to work the process.*—W. E. DEBENHAM.

Iron Show Tablets.

IN a recent issue of this journal (page 28) reference was made to the subject of iron show tablets taking the place of lithographic work, and in that notice some dozen or more prominent tablets were mentioned. A further careful inspection of public advertisements, exposed upon walls, in railway stations, and shop windows, shows that the number of similar tablets has reached a very large figure. Amongst these may be mentioned the six or more designs devoted to advertising Mazawattee Tea, ranging from long narrow strips to large oblong ones. The second size of Holbrook's Sauce and Collier's Cocoa, about 30×30-in. or more. The tablets of "The People," with its Union Jack, and the less attractive tablet of the *Manchester Examiner*. The inks of Lyons', too, whose old parchment advertisement has become familiar since 1889, are also advertised by a well-executed design containing the same old parchment upon iron tablets.

* The extreme simplicity in the lithographic description shews that the lecturer was acquainted with the subject, and endeavouring to teach his brother photographers.

Price's Candles have been advertised on iron for a considerable time by the well-known burning candle; Venus Soap, as well as Watson's Matchless Cleanser, have been reduced to the same solid foundation. Vernon's Millennium Flour is advertised on sheet iron in two sizes, viz., 30×12-in. and 72×36-in. Finigan's Baskets, Manchester, and Mason's Tobaccos, occupy large sheets of iron. Coombes' Eureka Aerated Pastry Flour, Tower Tea, Crossley's Gas Engines, Keen's and Colman's Mustards, Van Houten's and Epps' Cocoas, Schweitzer's Cocoatina, are more examples of the iron tablets. The breweries of Whitbread (London) and Morgan (Tamworth), as well as Macclesfield Co-operative Society Tailoring, are advertised in a similar way. Russel's Watches, Birmingham Carriages, and the Swan Hotel, Bolton, are others to be added to the ever-increasing list. The Railway Passengers' Assurance Company have a large attractive tablet with a circular view of London, whilst Sexton's Horse Repository is well advertised with a spirited representation of a horse. Chamberlin and Smith, of Norwich, also advertise their Pheasant Food on iron tablets.

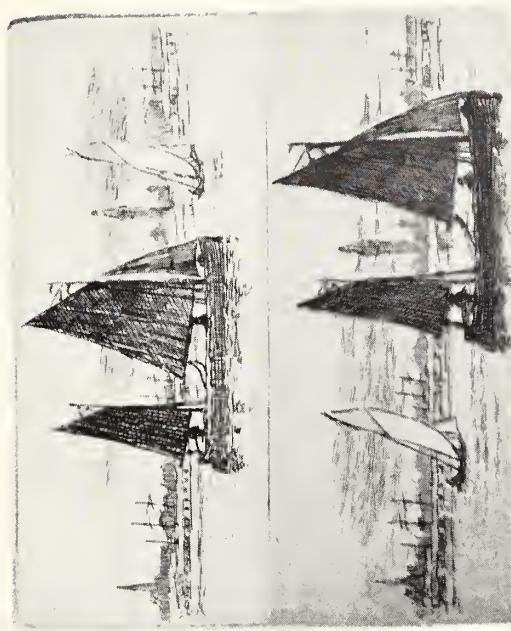
Leaving these more prominent outside tablets, it is somewhat unexpected to find Messrs. Gilbey advertising their whiskey, etc., on a well-executed window tablet. In the same way Jamieson's Whiskey and Kinloch's Specialities are brought to notice. These three are really good productions, and possess all the merits of lithographs. There are other window and shop tablets, such as Terry's Confectionery, Brook Bond's Teas, and Tonic Port Wine, which, if not iron, are made of paper pulp cast in moulds and coloured up. All these, and many more, must be taking business out of the lithographic printing firms and assisting to cause the present serious stagnation in the trade.

It may be said that printing upon metal is not new. Yes, that assertion is granted; but the majority of these iron tablets are cast in moulds and finished off in colour quite different to the familiar enamelling process or the printing upon tin, having some parts embossed from stone during the printing process. In this latter category may be mentioned the splendid decorated tin boxes made for the leading biscuit and mustard firms, and the printed and embossed tin tablet of Champion's Bristol Confectionery, or the chromolithograph of Carr's Biscuit Calendar, having movable dials to render it a universal calendar from 1892–1904.

The whole bearing of the case is that a new industry is springing up to the detriment of a large section of lithographic printing, and it behoves those who are dependent upon lithography for a livelihood to keep their eyes open to the main chance in being prepared to pass by easy stages into the altered condition of affairs, and thus secure for themselves a fair subsistence.

THE manufacture of tickets and labels in Germany is becoming more and more a speciality, and many large lithographic establishments do nothing else, some even limit their work to special trades. The variety of designs and their artistic elegance are specially noticeable. Nearly all these labels are printed on glazed and coloured papers, specially prepared to take the gold or silver print.

PRINTING.



Etching, Drypoint, Mezzotint.

By HUGH PATON,

Associate of the Royal Society of Painter-Enchers.

PRINTING—(continued).

Now we are ready to prove our first plate. We have passed it through the press with a dry sheet of plate paper upon it, and carefully examined the plate-mark to see that the pressure is equal on both sides and sufficient to ensure a good proof. I think it is possible sometimes to have too much pressure, but the probability is the other way. The pressure should be sufficient to emboss the paper with the more strongly bitten lines, and yet the plate should go through the press without any feeling of undue strain. Below the plate there should be a clean sheet of ordinary white paper, cartridge or any stoutish paper will do, cut rather larger than that upon which you are going to print. This enables you, after laying the plate square in the centre, to place the sheet for the proof over it so that the margin will be even. The paper for the proof is damped and ready for use, and the ink is ready mixed on the slab. A loose bunch of the stiff muslin, also a second piece folded evenly into a pad, and a further pad of the soft muslin, are laid ready to hand, with one or two other bits of fine rag. The spirit lamp has been lit for a little while, so that the plate of the heating box is pretty warm. The jigger, a wooden box about the size of the heater, is conveniently arranged close to the latter, and all in a good light to work by.

INKING THE PLATE.

Now lay the plate on the heater until it is too warm to be handled with comfort, remove it to the jigger, and proceed to ink it all over with the dabber. Use the dabber with a rocking motion, so as to avoid risk of scratching the plate. The least bit of grit in the ink will scratch if you rub the plate with the dabber, and friction should be avoided. The heat should be such as to soften the oil and make the ink work smoothly. If the plate cool to the stiffening point of the ink, put it on the heater again for a minute. Do the inking systematically, so as to ensure that every part of the plate is covered, and the ink thoroughly worked into the lines. Carelessly done, the ink may only cover the surface without getting into the lines, and the result will be rottenness in the proof. Now, with the plate on the jigger, remove the surface ink with the loose bunch of stiff muslin as the plate begins to cool, but without hard rubbing in case of dragging the ink out of the lines. Then, as the plate gets cool

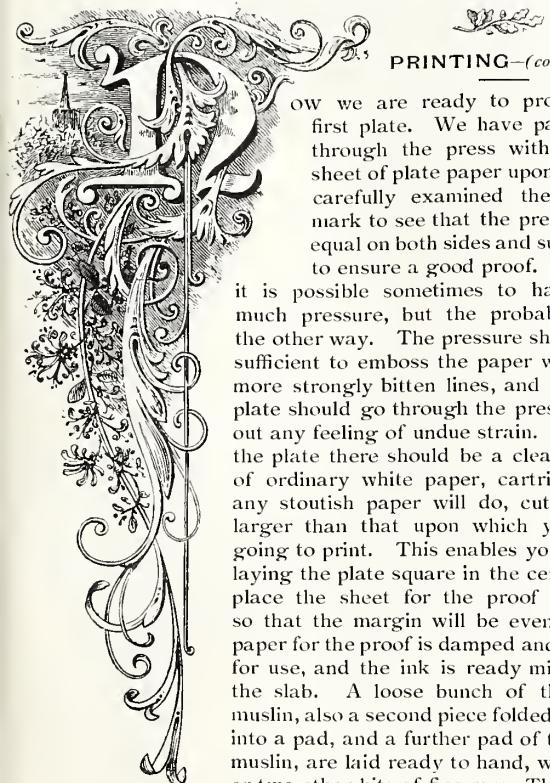
enough to be taken into one hand, proceed to wipe it evenly clean with the pad of stiff muslin, holding the latter somewhat tightly, so that the under surface is firm and regular. Polish the plate lightly with a circular motion until it is apparently uniformly clean. There is still a slight tone upon it, which can only be removed by special means, but this it is desirous to retain. It should as a rule, however, be only slight. Now clean up the edges with a bit of fine rag, and the plate is ready to give what is known as a "clean" proof. One of these should be taken from every plate in order that its exact condition may be seen.

RETROUSSAGE.

But in order to get an "artistic" proof, the plate must be submitted to a further process. It is laid again upon the heater until pretty warm, and the whole surface is then played over lightly with the loose pad of soft muslin. The pad should not be dragged across the plate, but played lightly over it with a hovering motion, a bit at a time until the whole surface has been treated. The effect of this is to tease out the ink in the lines, and care should be taken that it is not overdone. In the "clean" proof the lines are bare and cold and have a starved look, but in the proof treated in this way they show full and rich. It is only necessary to compare the two proofs to realise the artistic value of *retroussage*. There appears to be no English word to take the place of this, though I have heard some American etchers, in the direct but not always classical language of their countrymen, call it the "pumping process." Perhaps the nearest term in English would be the "teasing process."

The practice of *retroussage* is often objected to by the engraver of the mechanical type, whose ideas are founded upon the method of printing steel engravings. But it seems to me idle to discuss the question. One might as well object to the use of glazing in oil painting, or of Chinese white in water colour. If it be the case, as I insist, that the printing of a plate is part of the artistic process, and should be done by the etcher himself, then the means which he may adopt to obtain the effect he desires may safely be left to himself. *Retroussage* is regarded by all painter-enchers as an important part of the art of printing. It is the abuse, not the use, of it that may justly be condemned. The beginner must be on his guard not to overdo either the teasing process, or the amount of tone left upon the plate.

Sometimes it will be found an advantage to finish the cleaning off with the hand, after the use of the stiff muslin, but before *retroussage*. By drawing the palm sharply across the surface of the plate, the lines are left so filled with ink that they print rather more sharply and clearly than when the cleaning off is done entirely with the muslin. The action of the hand seems to have the effect of sweeping the ink from the surface and into the lines, as the action of the wind sweeps the snow off the edges of the furrows in a ploughed field and into the hollows between. The surface of the plate is whiter, and the hollows fuller, and the lines when printed are blacker by contrast. Instead of the outer edge of the palm, the ball part of the thumb may be used with a circular motion, the



effect being much the same, although I think that the tone is more even by this method. The careless use of the palm may leave the tone somewhat streaky in places. It may depend upon the plate whether the hand should be used in finishing off the cleaning or not. A delicate plate, of which the biting is slight and shallow, may be best finished with the hand, as it leaves the line rather fuller of ink. On the other hand, one in which the biting is decided, and especially when the ground has been of the harder kind, so that the line has bitten deeply without enlarging much, may better be finished with the muslin, as it tends to slightly reduce the amount of ink and prevent any tendency to extreme blackness in the strongest work. Only experience, however, will enable you to determine when to use one method and when the other.

When it is desired to get entirely rid of the slight tone that still clings to the surface of the plate, the hand should be lightly charged with whitening. Personally, I consider the use of the whitening very objectionable, and I always use it most sparingly. But a *very* little may be useful when it is desired to get the tone lighter than usual, or to remove it altogether.

The plate should be warm, but not hot, when passed through the press. If too hot, it is apt to partially dry the paper before it can be passed through, the result being a bad proof, dry and harsh in places. The whole object of the heater and jigger taken together is to get the plate just as hot as you wish it at any moment. It should be pretty warm while inking, in order to soften the ink and make it workable, slightly cooler as you begin to clean off the loose ink, and cool enough to be taken in the hand as you finish the cleaning; the stiffening of the ink as the plate cools prevents it being dragged out of the lines too much by the muslin. A small plate may be inked as it heats up on the heating box, and cleaned off nicely on the jigger in the time it takes to cool; a larger plate may require to be passed backward and forward a time or two. What is essential is to adapt the amount of heat to the need of the moment, bearing in mind its effect upon the workability of the ink. Some etchers lay the pad of stiff muslin on the heater for a moment to warm it previous to the final polishing. This facilitates the cleaning of the *surface* of the plate, while the ink is left in the lines almost undisturbed.

I find that the whole difficulty of getting a good proof lies in little points of this sort. With paper and press in good order, what is necessary is a little judgment in adapting the particular method to the plate to be printed from; for two plates may have to be treated quite differently. The plate that is strongly bitten may be printed without much difficulty, because any reduction of ink in the lines, due to the action of the muslin, is an advantage rather than otherwise, as it tends to reduce the blackness in the proof. On the other hand, the printing of a delicately bitten plate is a really difficult matter. The secret of this lies in the tendency of the muslin to remove too much of the ink from lines that are rather shallow; and it is here that a light hand in using the muslin, and a little skill in applying the hand in the final cleaning

off, combined always with the judicious heating of the plate as required, will overcome the difficulty.

I have hinted already that the amount of what I may call "natural" tone, the tone that is left on the plate after cleaning off with stiff muslin or with the hand, and which can only be removed by the aid of the whitening, should only be slight. There is a tendency on the part of the beginner to make undue use of this tone, by leaving it heavy in places and light in others. This is a temptation which should be resisted. The best etchers are agreed, I think, that the more straightforwardly a plate is printed, and the less it is "cooked" in the wiping off, the better. The leaving of a heavy tone is destructive of brilliancy in the proof; and though there are exceptional cases in which it may be retained with advantage, as in the dark background of a portrait, it should be used with the greatest reserve, and only after considerable experience. The beginner will do well to make a practice of cleaning his plates down to the point of the "natural tone," and of not depending upon anything more, except *retroussage*, which of course affects the lines rather than the tone of the surface.

Keep a good look-out for drypoint scratches as you finish cleaning off the plate. They are apt to make an appearance rather frequently. However well you grind the ink, and however clean you keep the ink slab, bits of grit will get in now and again. But although they look rather formidable, the scratches are only slight, and are easily removed by the scraper and burnisher. It is not even necessary to re-ink the plate. A touch from the finger slightly charged with ink, and a final polish with the stiff muslin, will effectually remove the damage.

TAKING THE PROOF.

The plate, cleaned off and teased as described, is now ready to be passed through the press, and should be placed square in the centre of the under sheet of paper. If the paper for the proof be of the substantial kind, such as the Dutch, no backing may be necessary; but if it be a thin paper, such as the India, it must have a sheet of stout plate paper, also damped, placed over it. These should be laid square with the under sheet, and the double thickness of printers' blanket laid over them carefully, so as not to disturb their position. Now pass the plate *once* through the press, remove the blanket, and lift the proof carefully. Use a paper clip to prevent finger marks.

This is the time when, as Mr. Menpes describes it, your work is "being born." The first feeling will probably be one of disappointment that there is so much white paper; the proof seems bare of work. This is the universal experience. Somehow, the lines seem thicker on the plate when you are making your drawing, especially those to be slightly bitten, and there is a want of colour in the proof. Only experience, however, will enable you to foresee the exact result. If the proof be satisfactory as to the drawing and the strength of biting, even if some parts be under-bitten, the plate is in good condition for further work. Your main anxiety should be that there is nothing to reproach you in the drawing, and that there is nothing seriously over-bitten. If that be so, the rest is comparatively easy.

DRYING THE PROOF.

Proofs should not be dried under pressure. The real amateur always examines an etching in a side light, and looks to the shadow of the heavy lines, which are more or less of a ridge, to enhance their richness. For the pressure in the press not merely causes the paper to take up the ink, but it forces it into the lines, especially the strongly bitten ones; a good proof shows these distinctly embossed on the paper. The wet proofs should be hung to dry over cords stretched across the studio, sufficiently overhead to be out of the way. When thoroughly dry, they may be damped lightly with a sponge, and then placed between the hard-glazed brown boards used by printers for the purpose, and left under heavy pressure. In the first drying the ink becomes hard and set, and the plate mark and other wrinkles may be taken out in the second drying without damage to the richness of the proof.

THE ILLUSTRATION.

I had intended referring the reader to the illustration in B.L. Nos. 8 and 9 as examples of "clean" and "artistic" printing, but the comparison is not altogether satisfactory, if only because they were reproduced by different means. The first is colder, harder than the clean proof from the plate, and the second is heavier and dirtier than a good artistic proof. I have therefore executed a small plate, in which I have repeated the subject, varying the composition merely for variety's sake, but keeping the values the same in both. The tone of the upper portion was partly removed by whitening, and the lower portion was left with the "natural" tone (finished with the muslin) and *retoussage* applied. The reader will be able to compare the two states by this means, but I ought in justice to myself to point out that it is a weak point of the reproductive process that a pure white cannot be obtained. The upper part of the illustration is not so *white* as in the original, and the lower part is heavier in tone. Further, the method is one which breaks the printing surface into points, and the result of this peculiarity is that the upper part is softer and richer than the original, and the lower part rather *overdone* as to these qualities. The reader will please make due allowance accordingly. But held at arm's length, the two parts of the illustration give a fair idea of the *difference* between the two parts of the original.

PAINTER-ETCHING.

We have now arrived at the end of part I., which has been devoted to a practical description of the art of etching and its allied processes. All authorities are agreed in considering that, although etching and aquatint (soft-ground etching may be included with the former, and sulphur tint with the latter) are the only two that are strictly *etching*, in the sense of *eating* or *biting* designs upon metal, the allied processes of Drypoint and Mezzotint are strictly artists' processes, and may be included in the term "Etching," in the larger sense of the word. Before proceeding to the practical details relating to acids, tools, and the paraphernalia generally of the etcher, I should like to put in a plea for the free and artistic, as distinct from the reproductive, use of the art. All the processes

described are equally available for the use of the painter-etcher and the reproductive etcher; the difference between the two lies in the *men*, and not in their *art*. Writing as I am for a body of readers largely occupied with trade processes, I may seem to have treated the subject too much from the amateur point of view. But so far as process and tools are concerned, these are the same whether used for the slightest sketch or for the most elaborate reproduction of a picture in full tone. Anyone wishing to make use of the art from the point of view of the engraver-etcher, will find here, I venture to think, all the information required to set him going. But I am wishful to insist upon the distinction which should be drawn between the two kinds of etching, a distinction which is not always kept in mind. Indeed, I have often met with the idea that etching is a purely reproductive art, an art used only for the copying of pictures, and in no wise adapted to the work of the original artist, and especially to outdoor work direct from nature, in the same way as painting in oil or water-colour. As a matter of fact, for one etcher whom you will find at work with his plate before him and his bottle of acid in his pocket, you will find a thousand painters. But why this should be I do not know. There is no more inherent difficulty in drawing correctly upon the smoked copper plate than upon a sheet of paper, and the whole apparatus for outdoor work goes into the same bulk as that of the water colourist (much less than that of the oil painter), and is only slightly heavier to the extent of the weight of a couple of plates. A pair of drawing boards of a convenient size, each with a shallow well in which two or three plates ready grounded and smoked may be fastened down with drawing pins, are carried with perfect safety face to face. The only care required is that they should not be jolted about for fear of the plates coming loose. For larger plates it may be well to fasten them down with one or two small screw nails, but plates up to (say) 7×10 -in. can be made quite secure with a few good drawing pins. In addition to these, a flat bottle, of the pocket-pistol type with a glass stopper, will carry acid enough for a day's outing. I have found it convenient and safe to carry this in a small ordinary schoolboy's leather bag, which should be riveted through both sides of the bag to the pair of straps which carry your boards, straps of the kind used for carrying a travelling rug. A few rivets and washers can be obtained at any ironmonger's. There is just room for the acid bottle in the centre section of the bag which comes between the two straps, and the two outside sections will carry a flat pencil case, containing two or three needles and some small brushes for stopping out, at one end, and a small bottle of stopping-out varnish in a wooden case at the other. A small pocket spirit level may also be accommodated in the bag. This is advisable to enable you to get your plate level when you want to do a biting, and so avoid the risk of the acid being wasted by running overboard before its work is done. The plate may be placed on the ground, on a wall, anywhere, in fact, that is convenient. The acid may be mixed beforehand with a view to probable temperature; it should be a little on the strong side, since water can be obtained anywhere, but acid cannot.

If thought advisable, a small supply of the pure acid from the stock bottle can be taken in any small stoppered bottle convenient to accommodate in the bag. For the stopping-out varnish I use the small narrow-necked bottle in which the homœopathic tinctures are sold, the smallest size, and carry it in one of the little wooden cylinder boxes in which drapers sell pennyworths of hairpins. You can buy one anywhere, and give away the hairpins! The bag should be so fastened to the straps, that when the latter are in place round the drawing boards it sits flat against them face outwards, so that the acid bottle can be put in after the boards are packed together. After that, all that is required is a little care to keep the whole right side up. It is apt to be awkward if the acid gets loose! Never carry the acid bottle in your pocket. Although it may not escape, the fumes do, and these will rot the cloth in a day or two. The hand-rest should be of the same length as the drawing boards, and may be slipped inside the straps. These, with a sheet of blotting paper placed between the boards, with which to dry your plate after a biting, complete the equipment, which does not weigh more than three or four pounds, plate included. With this in one hand, and sketching stool in the other, you can wander at ease in search of your subject, and sit down and get to work at a minute's notice.

Thus prepared, I have many a time put through a small plate, including several bitings, in a single afternoon, and taken a proof on getting home at night. There is no difficulty about it, no more than there is in making a water-colour sketch, and less than there is in making an oil one, for there is no bulky wet canvas to carry home. If I seem to insist too much on the detail of the necessary materials, it is only that I may show how little difficulty there is about it, and help the beginner to make a habit of working direct from nature upon the plate. A little extra care in placing your first main lines is all that is necessary to make the rest of the drawing comparatively easy; the amount of courage required to work in this way is soon acquired.

If there be any truth in the general experience of the artist that a sketch made direct from nature (I speak here of landscape work) has a freshness and vigour which are usually wanting in the finished work done in the studio, how much more especially so should it be in the work on a copper plate. The polished surface is so delightfully smooth to work upon, the point of the tool, the finest the artist has at his disposal, glides freely in any direction, the ground cuts cleanly and is keenly sensitive. On the other hand, the air and the sunlight, the wind-driven cloud, the fleeting expression on an old man's face, all that tends to inspire the artist, is there. And what wonder is it that the message is flashed along the line to the sensitive needle with all the verve of the original inspiration? This, then, is the sphere of the painter-etcher, the true sphere of his art. The man who takes his work direct to nature, will put what she tells him into it. For "out of the abundance of the heart the mouth speaketh," and as the brain is fired, so the tool trembles to the slightest touch!

END OF PART I.

TO PREVENT FORGED DOCUMENTS.—Many devices have been employed for the purpose of preventing dishonest persons from duplicating certificates of stocks, bonds, drafts, and such valuable documents, and a new process has just been introduced for making a design which will at least be difficult to imitate successfully. Ink is applied to a lithographic stone, and another similar stone is placed on its face, and the two rubbed together until the ink is so distributed that a variegated design is produced. When the ink is dry the design is transferred to paper after the usual manner. Of course, any colour may be selected for the ink. It is manifest, also, that the design thus cheaply produced can be varied indefinitely until a pleasing or effective one is obtained. A counterfeit is detected at once when compared with a sample of the genuine paper.—*Scientific American*.

INK FOR PREPARING PLATES FOR PHOTO-LITHOGRAPHY.—M. Toovey gives the following formula:—Ten to fifteen of white wax dissolved in one hundred grains benzine and mixed with twelve grains litho ink. A small quantity of the compound is put on a litho stone and well and evenly rolled; then take up with the roller a fine layer of yellow orange powder. When all is dry pass on the surface of the powder a mixture of three parts litho ink in seven of terebine, and when dry, and yet pitchy, powder with bronze gold. The artist having the point of his tool on this preparation, and his instrument resting on the black paper, sees his design as it works out in black on white ground. When this is done, he has a cliché impermeable to the light in the parts of the surface not opened out by the tool.

LITHOGRAPHIC STONES.—The *Bataille*, a journal of New Caledonia, says, in a recent issue, that "France possesses in that colony the best lithographic stones that exist in the world. The lithographic stones of this colony are much superior to the stones of Munich. Their hardness permits them to print as fine a line as can be obtained from copper plate. Their composition is of an incredible fineness. This quality, which we have never before met to so high a degree, permits of long runs, without spoiling or deteriorating from the work in the least. These stones are found at the Isle of Matho, near to the Woodin Pass. It is to be hoped that by their use we shall not be dependent for lithographic stones upon the foreigner any longer."

THE second volume (for 1892-3) of THE BRITISH LITHOGRAPHER (Raithby, Lawrence & Co., Ltd., Leicester and London) is, we are glad to see, considerably thicker than the first, and it shows no falling off from the high character of its predecessor in the value of its literary contents, or the excellence of its mechanical production. Very numerous supplements offer examples of various kinds of good work in monochrome and colours, and he must be a phenomenal British lithographer who finds the payment of four shillings a year, on this so useful and beautiful a publication, money otherwise than well spent. There ought to be a copy in every lithographic office in the empire.—*Printers' Register*.

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BY CHARLES HARRAP.

CHAPTER XIII.—(continued).

MATERIALS USED FOR TRANSFER PAPER COMPOSITIONS.

GUMS.

LN preparing transfer paper compositions, the number of gums available is very limited, being only the common gum arabic and gum tragacanth. Gum arabic has been fully dealt with in the B.L. (vol. I., No. 3, pp. 9, 10), where its chemical composition is fully described. It only remains to add a few general remarks upon the action and uses of gum in transfer compositions. Gum is too readily soluble in cold water to allow of its use in any but the smallest quantities in such compositions. But, being readily soluble and strongly adhesive, it is very useful as an addition to the hardest compositions, to give them a ready adhesiveness, which they would not otherwise possess; and it is only for that purpose that it may be used. If the gum exceed a very limited proportion of the whole composition, it causes the composition to run thin and slimy, and, in use for drawing upon, will dissolve under the ink and scrape up into the pen or brush.

GUM TRAGACANTH is a somewhat harder gum than gum arabic, although it consists mainly of the gums arabic and bassorin. The latter (gum bassorin) is, however, a gum more of the nature of gelatine, for, whilst it forms a jelly in water, yet it does not dissolve in it. It is this slowly soluble characteristic which makes gum tragacanth more useful than gum arabic in transfer paper compositions. The amount of this gum need not be so limited, and its general effect in such compositions is more like a glue or softer gelatine, which becomes slightly soluble in cold water. Gum tragacanth is also known as gum dragon, and is the same as used by shoemakers to glaze the edges of the soles and heels of boots. It is obtained from a number of bushes of the genus *astragalus*, which grow in Persia, Armenia, Asia Minor, Greece, Kurdistan, and the mountain chains of the Alps, Pyrenees, and Lebanon. Another variety, called Senegal tragacanth, is obtained from the tree *stericula tragacanth* or *pubescens*, growing in Sierra Leone, and from *stericula urens*, growing in India. Beyond these two, most of the other gums are too hard and too resinous

in character to be available for transfer paper compositions. The manufactured gum known as British gum, or gum substitute, might be used in place of either of these gums, and would have an effect closely similar to that of gum arabic. Gum substitute was fully described in vol. I., No. 3, page 10, and the drawbacks to its use there mentioned apply to it only as a substitute for gum arabic upon stone: they do not apply to its use in transfer paper composition, where it may be advantageously used.

THE THICKENING BODIES.

IN chapter XII. references were made to the use of materials for thickening the composition on transfer paper. A list of such materials comprises:—flake white, chalk, plaster of Paris, dry stucco, and talc.

FLAKE WHITE, or ceruse (meaning death or poison), is the same chemical composition as the mineral cerusite found in various parts of Britain and the Continent. It is also the same as painters' white lead. Chemically, it is the English white lead, consisting of oxidised lead carbonate, having as formula, $Pb Co_3$, or according to Roscoe, $2 Pb Co_3 + Pb H_2 O_2$. It is readily soluble in nitric and acetic acids. The special name of flake white is derived from its physical appearance: the material, after being manufactured, is in scales or plates, and like the thin, broad, brittle crystals of the mineral cerusite. When levigated, flake white forms body white. The soft character of this material readily lends itself to the making of transfer paper compositions. Being a lead compound, it is a good dryer, and when spread upon the paper assists in rapid drying. There is nothing in it which is likely to affect any transfer ink which may be printed or drawn upon its surface. The only point to be studied in its use is not to use it in too large a quantity. When used too extensively it adulterates the gelatinous material used so much as to render it partially inoperative. The gelatinous material will be saturated with the flake white, and will not form that impervious layer upon the surface which constitutes the best feature of a good transfer paper. Again, too much flake white dries in a crumbly mass, and when used, comes off in patches, destroying all the fine work which may have fallen upon the more crumbly portions.

PLASTER OF PARIS forms a very good alternative with flake white. It is the same material as gypsum, which occurs naturally in many parts of this country and on the Continent—a variety found near Paris, giving the name to the substance. The natural gypsum requires to be calcined (burnt) to make the plaster of Paris. Chemically it is a heavy, insoluble powder, having a formula, $Ca SO_4 + 2 H_2 O$, proving its composition to be a sulphate of lime. Such a compound is a ready dryer, and does not in any way affect any transfer inks printed upon its surface. It is well known that when water is added to plaster of Paris the plaster takes up the water and resets solid. For making transfer paper compositions, however, this resetting must not be allowed to take place. In mixing the plaster, therefore, water must be added whilst the plaster is well stirred, until the amount of water exceeds the quantity required as the water

of crystallisation, and the recrystallised plaster is kept in solution with the extra water. It forms a fine, soft body when mixed with a gelatinous substance, which binds its particles together. It should not be overlooked that the plaster in its altered condition does not set with that stony hardness which constitutes its characteristic for plaster work; it has, in fact, passed that stage, and has become nothing more than a fine mineral powder or sand. It is for this reason that it is often recommended to use old plaster of Paris. As to the quantity of plaster to be used, the same remarks apply as already made for flake white, although compositions can be successfully used which are composed half of plaster and half of a gelatinous material.

CHALK, as a thickening material, is more liable to injury than either of the two preceding materials. Chalk is the soft, crumbly carbonate of lime represented by the formula Ca CO_3 . This substance only requires to lose its carbon-dioxide (gas) to become quicklime [Ca O]. In fact, quicklime is prepared by calcining chalk, and whiting is prepared by thoroughly purifying chalk. When the chalk has become well mixed into the gelatinous materials, it is preserved to a large extent from chemical changes, and it forms a very good material for thickening with. Chalk, though so extremely fine, is composed almost exclusively of the shells of sea organisms, which for ages were deposited as a thick sediment at the bottom of the sea, gradually being pressed into the chalk cliffs or rocks so prominent on the south and south-eastern coasts of this country. Notwithstanding the heavy pressure which has formed these tiny shells into the chalk cliffs, yet, under the microscope, the individual shells can be seen almost as perfect as originally grown.

In using chalk for compositions, it is found to be more slimy than the other two, and owing to its origin, is more liable to dissolve readily on the application of water. The amount of chalk used should be kept down to a small proportion.

STUCCO, as a thickening material, is complex in its composition. It is made originally from chalk, which is converted into fine (caustic) lime. The caustic lime is then reduced to slaked lime [Ca(OH)_2]. The slaked lime is made into different varieties of stucco by mixing with it either very fine sand, or gypsum, or chalk, or plaster of Paris. If either of the latter three be used, then there must be an addition of gelatine or glue as a binding material. Stucco, therefore, is a very fine plaster, well suited for transfer paper compositions. It may be used in large or small proportions, according to the character of the transfer paper required.

FRENCH CHALK may also be used as a thickening material. Its popular name of soapstone conveys to the mind that it is a very soft, slippery dust or solid. It is certainly a fine material for compositions, but lead white is equally good. In its chemical actions scarcely any powder can be found which is more neutral. It is one of those bodies which may be termed almost insoluble, for there are very few acids which have any effect upon it. Being of such a neutral character, in mixing it in compositions it must be well bound together by a good gelatine. French chalk is really talc, and is chemically a silicate of magnesium.

Besides the above-mentioned materials for thickening purposes, there are many others which could be mentioned, but, from a point of economy, there are none so cheap. Again, whilst many would make good pastes, yet chemically they would react either on the gelatine or inks, and thus nullify their effects.

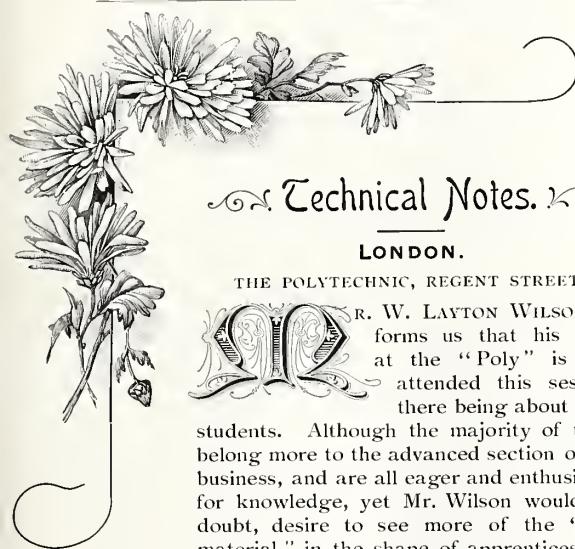
[To be continued.]

ERRATUM.—On page 51, vol. III., No. 14, in treating upon albuminous bodies, the general formula was inadvertently put down as “ C H O N S ,” instead of “ $\text{C}_{54} \text{H}_7 \text{O}_{21} \text{N}_{16} \text{S}$.” It was also stated that “albuminous bodies are soluble in cold water”; whereas it should have read, “albumens (as serum and egg albumen) are soluble in cold water.”



ONE of the most regrettable results of photographic piracy is that which has led Miss Kate Greenaway, the well-known artist, to abandon the charmingly quaint and dainty pictures of children with which her name is associated. If such a thing were possible, Miss Greenaway's work was even more popular in America than in England, and her books always commanded a brisk sale across the Atlantic. As soon, however, as the art of chromo-lithography improved in the States, piracy began, and unscrupulous publishers were able, with the assistance of photography, to produce facsimiles, and sold them at a much reduced price. The consequence may be imagined. The sale of the English editions, which, of course, alone benefited the artist, began to decline, and, at last, she had the mortification of seeing the American demand reduced to the score of copies required by the publishers for imitation. Matters having reached this point, Miss Greenaway decided to abandon book illustration once and for all, and so, owing to the absence of any artistic copyright arrangement between the two countries, the art world will be deprived of any further examples in this direction from the artist's graceful pencil. Probably, however, Miss Greenaway will be tempted into more ambitious paths, and it is to be hoped that the forthcoming exhibition by the Fine Art Society of her water-colour drawings will encourage her so to do.—*Photographic News*.

THE transferrer, M. T. E. Dite, in the art and book printing office, “Steyrer mühle,” in Vienna, has found a means to partly do away with the grinding of lithographic stones. In autographic works, as well as in small transfers, which are to be renewed immediately in the press, it is only needful to wash the stone thoroughly and, perhaps, to go over it lightly with a flat pumice stone; all other grinding is superfluous. The preparation is not acid; consequently it is not hurtful to the mass of the stone. The stone receives, after the washing, the appearance of a stone which is well ground, and is able to absorb any kind of transfer. The preparation is so cheap that the quantity of it which is needful to wash a stone amounts only to a small fraction of a penny. The production is easy and possible at any time.—*Graphisches Central-Blatt*.



Technical Notes.

LONDON.

THE POLYTECHNIC, REGENT STREET.

R. W. LAYTON WILSON informs us that his class at the "Poly" is well attended this session, there being about forty students. Although the majority of these belong more to the advanced section of the business, and are all eager and enthusiastic for knowledge, yet Mr. Wilson would, no doubt, desire to see more of the "raw material," in the shape of apprentices and young journeymen. We learn that considerable new facilities are being added for the practical instruction of the class: a technical library is being provided, and additions made to the workshop plant. During the session there will be a series of practical demonstrations in photo-lithography, to which the students of the litho class will be admitted free; and, as a footnote to the prospectus says, for the students who also require to learn the practical preparation of negatives for litho work, a special class will be held by Mr. C. W. Whiting, the well-known head operator at Eyre & Spottiswoode's. Mr. Wilson further states his willingness to introduce to the notice of the class any really good invention in connection with lithography, and solicits examples of artistic work in all branches for the purpose of illustrating his remarks to the students, and anything new and interesting will be acceptable as exhibits.

EAST LONDON PEOPLE'S PALACE.

WE regret very much to learn—especially just now when so many lithographers are out of work because it is said that foreign work is better than ours—that the authorities at the People's Palace have not seen their way to start a class in lithography this session. We are informed by a gentleman who has interested himself in the matter that they term lithography a "fancy business," and seem to think it somewhat beneath their notice. It seems to us that there is a lesson to be learned somewhere about here. As a contrast, we note the very large classes and enthusiastic working of everyone concerned at the Borough Polytechnic, which is doing for the south side of London what the People's Palace should be doing, but is not doing, so far as printing and the allied trades are concerned. From this sweeping remark, we of course exclude the bookbinding class, which has only just been started and is a great success, but we cannot help thinking that if the managers took a little more interest in the printing classes there would be much better results. As far as we have learned, the letter-press class at the People's Palace never appears to have

reached more than a score, and as we know there are fully as many printers living in the immediate neighbourhood of the Palace as there are on the south side, we think it is time the directors of the institute looked a little more closely to the matter. This, we believe, is the third year that the want of a litho class has been pointed out, and yet nothing has been done. At the Borough Polytechnic, though every classroom is crowded to excess, and this is only their second session, the authorities are, we learn, contemplating a litho class with a good plant for practical purposes. It looks as though someone down east wants a vigorous stirring up.

A New "Air-Brush."

HE DEMONSTRATION of the capabilities of a new "air-brush" (an American patent) was given recently at the offices of the *Photogram*, Memorial Hall, Farringdon-street, E.C. The new brush, or rather tool, is the invention of Mr. C. L. Burdick, of Chicago, and appears to be an improvement on some of the systems now in use, as there are no intricate parts to get out of order, and simplicity in structure has been made a special feature. It is of a size and shape similar to that of an ordinary lead pencil, and is held in the hand in the same way when working. The technical possibilities of the tool are something which must be seen to be appreciated. The operator can go from a fine line the width of a lead pencil mark, to a solid band of colour nearly an inch in width; or, without change of colour, can make the most soft and delicate shadows, or instantly throw a spray that will produce a dark, heavy shadow, with a corresponding dark texture. It is also possible to produce a wash with it, as in water-colour work. Portraits, pictures, or drawings done with the tool have a peculiar softness and beauty, which is both pleasing and highly artistic. It will be very useful to photographers in finishing portraits and re-touching or building up large negatives; and lithographers, draughtsmen, and designers should find the tool a most valuable adjunct to their work. Judging from the specimens shewn, the quality of the work done appeared to be excellent, and possessed of a cleanliness scarcely to be produced by wash or stump, and, while much more rapid and effective, equal to the finest stipple.

M. VILLON publishes the following process for printing photographs on marble:—Coat an unpolished plate of marble with the following solution: Benzine, 500 parts; spirits of turpentine, 500 parts; asphaltum, 50 parts; pure wax, 5 parts. When dry, expose about twenty minutes under a negative which will take in sunshine. Develop with spirits of turpentine or benzine and wash in plenty of water. Now cover the place intended to be left white with an alcoholic solution of shellac, and immerse the same in any dye which is soluble in water. After a while, when enough of the colouring matter has entered the pores of the stone, it is taken out and polished. The effect is said to be very pretty.



Trade Reports.

(From our Special Correspondents.)



LONDON.

THE lithographic artists of London have made one of those praiseworthy individual efforts at self-culture which should prove both useful to themselves, and an incentive to others to go and do likewise. It may be remembered that at the Workmen's Exhibition in London during last summer, the artists of London occupied the arcade gallery, and made a separate exhibition of artists' work alone, with a view to shew that high-class lithography could be designed and drawn in England. Following upon that, they held or instituted an art union for the purpose of raising money to fit up an art institute or club for themselves. At this club it was intended to have facilities to learn various classes of drawing which the art schools of this country fail to touch in their ordinary curriculum. The idea which they had in view, they have brought to a practical issue. During November of last year they opened their Institute at 35 Clerkenwell-road, London, E.C., and they have at present a suite of rooms devoted to the purposes of the Club, and to the Society. Their rooms are set apart for social or club meetings, for life classes, for lectures or for small classes in the antique, etc., and they have also an office for the secretary.

GLASGOW.

NOTWITHSTANDING the offer made by the Glasgow and West of Scotland Technical College, to the artists of Glasgow, to lend them a room for art classes and for their own purposes, the artists have preferred to make an effort on their own behalf to establish an art club, and they have progressed so far as to take commodious rooms at 180 West Regent-street, Glasgow. At these premises they have brought into existence "The Graphic Arts Club." This club is well attended by the artists of Glasgow, and is governed by a committee of four and the secretary (Mr. W. P. McKenzie) elected at the annual meeting in May. One of the principal objects of this institution is to hold a life class on the lines which are required by the practical designer, rather than upon the old lines of the art schools, whose leaders seem to think that life can only be studied in the nude. On the contrary, lithographic artists require to study life or nature in its ordinary garb, to fit them to work up the vast amount of commercial pictorial work which constantly comes under their hands. The life class is to be held on two nights each week, and it is to occupy two hours. Seeing the difficulties which they will have to meet, the fee of fifteen shillings for the term (from November to May) will not be any too much. For any other particulars, artists should apply to the secretary, at 9 Maxwell-street, Glasgow.

DERBY.

TRADE still continues very quiet indeed, all branches showing the depression. This is particularly disappointing, as the present season is usually one of the busiest of the year.

Correspondence.

Headingley, Leeds, December 26th, 1893.

To the Editor of THE BRITISH LITHOGRAPHER.

EAR SIR,—I venture to call your attention to a clerical error in your issue for October and November last. In the formula I gave, I wrote xylo₇ and you printed it xylo_x. I did not at the time think it of much importance, as I supposed any chemist "up to date" would know what was meant. The gentleman who gave me the formula says that xylo is one of the lye products of tar distillation. In fact, its name tells us that, for there are other things with somewhat similar names all of which are derived from tar. The exact formula I use is:—

Stockholm tar	... . . . .	2 fluid dr.
Xylo	... . . . .	3 " oz.
Bitumen	... . . . .	about 2-dr. (apothecaries)

I should not have troubled you again about it, but I had a letter from a gentleman who stated that he had been unable to obtain the xylo_x, as none of the chemists knew what it was.

I am looking anxiously for the continuance of the papers on "Practical Lithography," as I must confess I never could see the advantage of the exceedingly adhesive papers one buys at the dealers'. Surely it must be better to use a paper it is not easy to over-damp than one that, if damped too much, has literally to be scraped off the stone. Why should one bother with *parchment* size, when by adding glue as desired to starch one can get as *hard* a coating as wished for, and one which will adhere to either hot or cold stone and is not likely to get over-damped? For instance, I generally make my own paper, and use one part by weight of glue to four parts of starch (making a total of five parts), and I have found this to suit for nearly all work, and it can if desired, of course, be hot rolled to make it as smooth as wished for. For retransfers, stone to stone, I use a hot-rolled Scotch paper as being less liable to "smash."

Yours truly, H. O. GRANTHAM.

41 St. George's-street, Cape Town,

November, 1893.

To the Editor of THE BRITISH LITHOGRAPHER.

EAR SIR,—Reading in a recent number of the BRITISH LITHOGRAPHER an answer to Mr. W. Burnell, on the subject of reversing, I enclose specimen of original and result done in twenty minutes. The process is as follows:—An impression is taken in ordinary printing ink from type, plate, or stone, being careful not to have more ink than is necessary, then dust over with finely-powdered gum, and lay down on a damp stone. When the stone is thoroughly dry roll up in transfer ink and roll up in the usual way. If too much ink is used in the first impression, it will percolate through the gum.

Trusting this may be of use to your readers,

Yours truly, E. AUKETT.

[We are much obliged to Mr. Aukett for the illustration of transposing from black to white done by the gum process, and it is not a bad one for that process. But it is scarcely so fine as the majority of transpositions which are done by the method which was given in answer to Mr. Burnell.—ED.]

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Trade Notes.



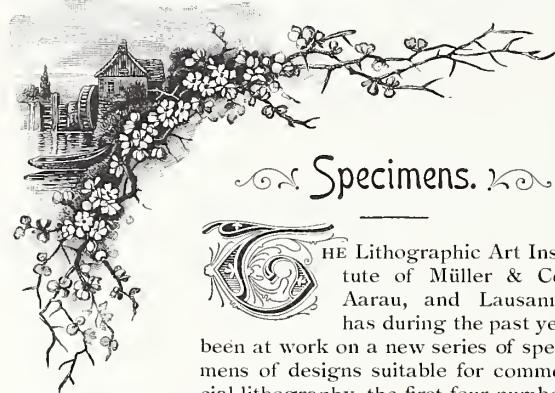
A NEW Specimen Book of their excellent series of high-class Printing Inks has, during the past year, been in active preparation by the well-known firm of A. B. Fleming & Co., Ltd., and was issued to customers in the first week in January, an advance copy reaching us a week or so earlier. In the first place, the book itself is of a very handy size, measuring only 8 x 6 inches, and is in the shape of a portfolio, in which the pages are inserted loosely, so that they may be taken out for purposes of comparison and for the use of artists. On opening the portfolio, the first thing to attract attention is the price list, got up in dainty style and admirably printed by Mr. E. T. W. Dennis, of Scarborough, the cover being an exceptionally attractive piece of colour work. Glancing through the contents we find that the printed specimens comprise upwards of 160 distinct colours and tones, besides a great variety of tints, and attached to every colour is a letter showing that they are (*a*) absolutely permanent even when reduced to a tint, (*f*) fairly permanent when printed full strength, (*n*) not permanent, (*t*) transparent, (*v*) can be varnished with spirit varnish; a very useful indication for the guidance of the printer as to the permanency or otherwise of the colours he is using, and thus rendering it possible for him to select his colours according to the standard of the work he is doing. The issue of this specimen book has been specially undertaken with a view to extending the company's business in high-class coloured and lithographic printing inks, and also with the purpose of opening up a new business which they have not hitherto endeavoured to undertake, namely, that of Dry Colours. This latter branch of the business is under the management of Mr. C. G. Zander, a gentleman of large and extended practical experience. Every colour is carefully tested and tabulated under his superintendence, and may be absolutely relied upon as being what it is represented to be in the price list. We have carefully examined the printed specimens before us, commencing with the very artistic chromo title-page, and through the various artistic designs specially prepared to show off the beauty and tone of each special colour, and admiring by the way the beauty of tone and excellent presswork of the numerous fine half-tone illustrations, and the depth and richness of the colours specially prepared for photo tints, as well as the clearness and brightness of the tints themselves; and we have come to the conclusion that the company have no intention whatever of taking a back seat as printing ink manufacturers, and the invitation they give to the trade in this new

specimen book is of a quality and abundance that cannot possibly fail of meeting with a strong and hearty response from printers all over the country. At the time when the firm of A. B. Fleming & Co. was established, forty years ago, there were not ten firms engaged in Great Britain in making printing inks, whereas there are now nearly fifty, and during the last ten years there is scarcely one of them that has not doubled, trebled, or quadrupled their powers of production—the works of A. B. Fleming & Co. now occupy five acres of ground—and the competition for trade is probably far keener even than it is amongst printers themselves. It is generally supposed in these go-ahead times that old-established firms have a difficulty in keeping up with the running, but it is certain that A. B. Fleming & Co., Ltd., are wider awake and more up-to-date than many of their younger competitors, and with their new specimen book speaking for them to every printer who secures a copy, there can be little doubt but that the firm will continue to keep "at the front." We should advise every one of our friends who do not receive a copy of the new specimen book to send along their business card and ask for a copy, and we are pretty sure that orders will speedily follow.

PRINTERS have now had ample opportunity of judging the capabilities of the bronzing machines made by Messrs. W. B. Silverlock & Co. Seeing that over 160 of these useful machines are now at work in various parts of the country, there should be little cause for unduly cautious would-be purchasers still holding back until they are perfectly assured of the thorough working and labour and money saving qualities of the machines. The mere fact that forty-five bronzers of this class have been sold during the last twelve months speaks volumes for the appreciation they are meeting with in the trade. Those who have not as yet heard more particularly of the machines may obtain all information as to capacity, cost, and where to be viewed, by communicating with the makers at 29 Ludgate-hill, E.C. Two "Silverlock" bronzers and a burnisher are at work at the De Montfort Press, and give as much satisfaction as it is possible for any machine to do.



THE South American republic of Chili has less than a dozen lithographic printing houses. At Valparaiso, the capital, with 105,000 inhabitants, there are only five, which have generally more work than they can get through. A German, who owns the largest letterpress office, has recently added lithography and bookbinding. At Santiago there are five litho houses, the largest belonging to a Frenchman, who has four machines; the others are Germans who have one or two machines each. At Concepcion there is one litho house with one machine. The lithographers are mostly Germans, and the wages are about one-third higher than in Europe. The working hours are from 8 to 11 in the morning, and from 12.15 to 5 in the afternoon, overtime fifty per cent. extra. There are no trade unions either amongst employers or employed.



Specimens.



THE Lithographic Art Institute of Müller & Co., Aarau, and Lausanne, has during the past year been at work on a new series of specimens of designs suitable for commercial lithography, the first four numbers of which have just reached us. Each part contains six quarto pages, some of the pages containing five or six separate designs, shewing invoice and memo headings, business cards, labels for all trades, and decorative designs for menus, wine lists, etc. Looking through the entire series, we note that the designs are such as will commend themselves to English artists, as the foreign element, except in the wording, is almost entirely wanting; in fact, the Swiss artists who have been engaged on this specimen book appear to have had English tastes in view throughout, and on almost every page there is considerable freshness, variety, and exceptionally good taste, both in ornamentation and colour, whilst the printing is amongst the best we have ever seen. These specimen books can be had from the publishers of THE BRITISH LITHOGRAPHER, at 2/6 each, post free.

A VERY attractive chromo showcard for a local boot manufacturer has been sent us by Mr. T. H. Crumble, Silver-street, Leicester. Being a special shoe for cyclists, the artist has taken the opportunity to introduce the portraits of three well-known riders, a drawing of the shoe occupying the centre of the design. The lettering, chiefly in red, black, and gold, is not only remarkably clear and distinct, but is also excellently drawn. The colour scheme is in keeping with the design, and the printing is really all that could be desired, in fact there is no fault to be found with it.

A BUSINESS card from Mr. B. Reston, Albion-street, Leeds, though printed only in one colour—blue-black on white card—is a very effective and taking piece of work. The lettering is quaint without being indistinct, and the decoration, which takes the form of conventional foliage and ribbons in front of a light mottled ground, is both tastefully arranged and carefully executed, and the printing is exceptionally good; in fact, as a specimen of monochrome, we have scarcely ever seen anything better.

JUST too late for notice in last issue we received from R. Johnson & Co., Ltd., Southport, a very neat bit of script writing, in the form of a circular announcing extensive additions and alterations in their lithographic department. Not only is the writing exceedingly good, but the printing also, on a rose-tinted paper, is well up to the best standard of the

day. The company claim to be the only lithographic printers in Southport, and if all their work is turned out in similar style to this circular they will probably be able to stave off all competitors.

A NEW business circular from Mr. G. Beale, Lord-street, Liverpool, shews excellent workmanship both in decoration and lettering, the heading and semi-border being so arranged as to shew various styles of ornamentation. The business card, which is let into the ornamentation at the top, shews excellent well-arranged lettering, and the script writing in the body of the circular is at once both clear and distinct. The printing, on rose-pink tinted paper, is remarkably good. Mr. Beale has evidently had considerable experience, and can be safely trusted to do his best for his patrons.

MR. T. BROAD, JUN., St. Bride-street, E.C., sends us a parcel of remarkably good and tasteful specimens of chromo-lithography and several examples of chalk work, every one proving that he is keeping the technical and artistic execution of his work up to his usual high standard. The artistic treatment throughout is exceptionally good, no matter what the style of the work is, and the execution shews conclusively that Mr. Broad's ideas of work are that any job worth doing at all is worth doing well. Another feature of his work is the remarkable brightness, clearness, and brilliancy of all the colours and tints used, a feature which is not too frequently the case in commercial lithography. Mr. Broad's specimens always come in amongst those which we take pleasure in preserving.

MR. C. J. HILLMAN, of 1 Dyer's-buildings, Holborn, E.C., has issued a very neat circular intimating that he has taken into partnership Mr. F. C. Nosworthy, and that the title of the firm in future will be Messrs. Hillman & Nosworthy. The circular itself shews a very artistic heading, in which both the lettering and decoration are exceptionally good, and the script writing in the body of the circular is remarkably sharp, clear, and readable, whilst the printing leaves nothing to be desired.

THE "Show-Printing" house of Mr. J. J. Miller, Post Office-place, Melbourne, Victoria, is well known all over the Australian colonies for effective artistic designs and the very best class of workmanship. A parcel of chromo posters, chiefly circus announcements, bear ample evidence that the reputation accorded him has been well earned. The designs are in every case artistic in treatment and colour, the colours themselves bright and clear, and the printing all that could be desired. A programme for the Princess Theatre, Melbourne, is a neat bit of work, the cover shewing a view of the theatre, with portraits of prominent members of the company, done in half-tone, and printed in blue in plain gold borders.

AN unusually attractive chromo calendar is to hand from Mr. E. Shardlow, St. Martins, Leicester. The business part of the announcement is grouped at the left-hand side of an oblong quarto card, the lettering, which is especially effective, shewing up in front of a

The Arms of the Boroughs & Towns of Great Britain.
Containing various points of note for the artist on the ART of BLAZON.

Bradford. C. B.



Yorkshire. 216.361.

Bingley. L. G. D.



Yorkshire. 10.023.

Boston. M. B.



Lincolnshire. 14.593.

Bodmin. M. B.



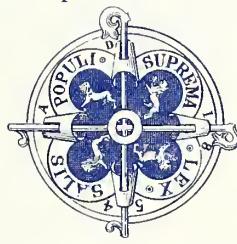
Cornwall. 5.151.

Burnley. C. B.



Lancashire. 87.058.

Bishop Auckland. U. S.



Durham. 10.527.

Bexley. U. S.



Kent. 10.605.

Andover. M. B.



Hampshire. 5.852.

Basingstoke. M. B.



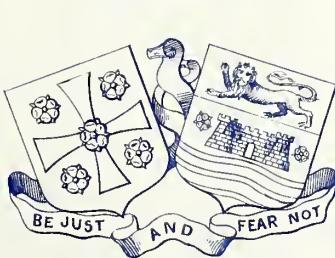
Hampshire. 7.960.

Bridgwater. M. B.



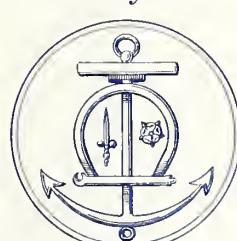
Somerset. 12.429.

Carlisle. M. B.



Cumberland. 39.176.

Bewdley. M. B.



Worcestershire. 2.876.

silver ground, around which is a wreath of wild flowers. The monthly slips are fastened at the right hand side of the card, with a full calendar for the year at the back, daintily worked out in gold and light tints. The groundwork of the whole design is a light green, a plain border in mauve and gold with white lines at either side giving an extremely neat finish to a very tasteful and fetching piece of work, admirably executed in every detail.

MR. R. W. STEVENS, of Plymouth, submits a parcel of admirable specimens of commercial lithography, all of which do him and his staff considerable credit. The showcard for the "Royal Yacht Serge" is really a striking piece of work, and half-a-dozen programmes for various associations which assembled at Plymouth last year are amongst the best things of their kind that have come to our hands for some time past. In most of these the best work is put in on the front pages, and it is to the credit of Mr. Stevens' artistic staff that not only are the designs appropriate and effective but unusually correct in decoration, whilst the colour schemes are invariably neat and tasteful, and in the cases where colours and gold are used some exceptionally harmonious effects are shewn. The lettering is, in every case, especially good, being quaint and at the same time clear and readable. The technical execution is in every respect well up to the best standard of the day. Mr. Stevens claims to execute every branch of business on his own premises, and every parcel of work we receive from him shews conclusively that he and his staff work *con amore*.

It will be remembered that the Associated Chambers of Commerce of the United Kingdom met in September last at Plymouth, and were entertained by the mayor at the Guildhall. A copy has been sent us of the unique invitation card designed and executed for the occasion by Mr. J. Smith, Notte-street, Plymouth. The general idea and style of this design is a new departure from the usual run of invitation cards, being unique, appropriate, and of a national character. The borough arms, with that of the mayor, are richly emblazoned, the border being composed of the rose, shamrock, and thistle intertwined; in the four corners are the arms of England, Scotland, Ireland, and Wales, representing the United Kingdom; and on either side of the mayor's are those of Devonshire and Cornwall. On either side of the general design are beautiful vignettes—one of the Guildhall Buildings, and the other of Plymouth Harbour. The wording of the invitation is in the centre of the card in gold and colour, interlaced with scroll work, and the invitation will form a memento of the occasion to be treasured by the fortunate recipients.

FROM Messrs. Niven & Co., Brisbane, Australia, we are in receipt of a number of illustrations executed by the "Crisp" Photo Process. Several of the specimens show effects that we have not hitherto seen in collotype work. Amongst them are several remarkably fine views of the Botanical Gardens, a reproduction of the well-known group of statuary, "The Flight from Pompeii," which comes out remarkably clear and distinct, and, finally, a splendid

chromo-collotype portrait of General Booth, which is one of the very best things that we have yet seen in coloured collotype work. Messrs. Niven & Co. are to be highly commended on the high excellence to which they have brought their process, and we hope to see more of it in future.

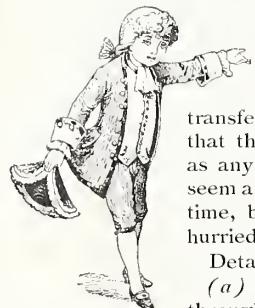
AN 1894 wall calendar (14×11-in.) from Messrs. W. & G. Baird, the proprietors of the popular *Belfast Telegraph*, is a good specimen of chromo-lithography. The design shows a couple of newsboys at a street stand, one energetically pushing business while his partner lounges over the papers and indulges in a smoke. The subject is a particularly appropriate one, and, while warm colours predominate, the work is praiseworthy. The monthly date slips, clearly printed in black and steel-grey on white ground, will alone ensure the almanack a place in every business house.

A HANDSOME chromo calendar from Bemrose and Sons, Ltd., Derby, has for centrepiece a view of the first silk mill in England, erected on the river Derwent in 1777, and recently demolished. The calendar is arranged under it, and the business announcement at the top; a broad border in which is incorporated a series of views in outline of the various operations in connection with different branches of the firm's works, gives a neat finish to an effective design. The colour scheme shows very tasteful treatment, the drawing and grouping are well done, and the printing, both in register and clearness and brightness of colours and tints is everything that could be wished or expected from a firm of such high standing.

PRINTING AND KINDRED TRADES' FEDERATION.—At a recent preliminary meeting, held at 3 Racquet-court, Fleet-street, it was unanimously resolved "That this meeting strongly recommend that the federation of the printing and kindred trades be proceeded with forthwith." The following nine societies were represented:—The National Society of Litho Artists, the Bookbinders' and Machine Rulers' Consolidated Union, the Vellum Account Bookbinders' Society, the Printers' Labourers' Union, the London Society of Machine Rulers, the Printers' Warehousemen and Cutters' Union, the Litho Stone and Zinc Preparers' Society, the Platen Printing Machine Minders' Society, the Typefounders' Society. Letters were also read from the Printers' Machine Managers' Society, the Consolidated Bookbinders' Society, and the Amalgamated Pressmen's Society, regretting that, owing to their executive not holding a meeting in time, they would be unable to send delegates. A sub-committee, composed of one delegate from each society, was then formed, with instructions to invite each society not represented to appoint one delegate to serve on the sub-committee, to draw up a scheme of federation to lay before the next delegate meeting.

A FIRE broke out in the lithographic works of Messrs. Alex. Woodrow & Sons, Glassford-street, Glasgow, on December 28th. The building is one of five storeys, with a frontage of 80-ft. The rear part of the building and the two upper storeys were burned out. The damage is estimated at £20,000.

Answers to Correspondents.



IN REPLY to Mr. Grantham, of Leeds, who very kindly sends the following method for transferring chalk-paper transfers to cold wet stone, we believe that the process adopted is about as good as any that could be performed. It may seem a long one, and appears to take a long time, but it is a matter which cannot be hurried, and calls for careful treatment.

Details of the process adopted:—

(a) Stone damped, and transfer run through three or four times.

(b) Back of transfer wet with hot water and rubbed with finger tip, so as to make it peel off in little rolls, thus making the paper thinner.

(c) Run through press again three or four times with a fairly good pressure.

(d) Repeat the above section (b).

(e) Repeat the above section (c), with heavier pressure.

(f) Rub the backs of the transfers again, as in section (b), until the work begins to show through. Then run through under full pressure. Peel off the transfer and wash clean.

The damping of transfers is, first, to moisten the adhesive material in the composition, and secure the transfer to stone. The grease in the transfer ink should not be too dry to transfer to stone without any moisture being applied. But the moistening of the transfer paper certainly does assist the ink in its power to transfer to stone, it being partially dissolved. Secondly, moisture is applied, over and over again, for several reasons which are purely mechanical. Thus, owing to the first moisture drying out, it is necessary to renew it to keep up the adhesion; and the application of moisture is necessary to dissolve the composition from the paper, and allow of its removal from the stone. In principle it is only necessary to put grease to a stone to secure a lithograph, as is done with the autograph transfers, which are only run through once. But it has become a practice to run through very often and to damp often, because it attains the object much more quickly than by running through once and waiting for the transfer to mature itself. If a transfer is left after the first run through, it will get a good hold of the stone, and the paper will dry off; but it takes a long time, especially when some "papers" are used, and as a rule printers cannot afford to wait.

IN reply to Mr. Fender, of Edinburgh, it seems that the whole difficulty arises from a proper method of drying the sheets. There seems to be nothing wrong with the inks used in printing, except that they might be made with a better drying quality. In a printing of that kind, containing so many colours overlaying each other, there should be proper provision made to secure that the first colours are well dried before another colour is printed on the top of them. Again, considering the thin paper on which the work is done, the first colours should contain a fair proportion of one

of the pomades—such as Manders' pomade—to assist in softening the layer of varnish which is put on in every consecutive printing. By introducing some such pomade in the inks, the later printings will fall upon the earlier ones, and will become as dry as though they were printed upon new paper. If a pomade be not used, then the sheets must be well dried by exposure to the air, to secure for the following printings a good surface to dry upon. This can be done by any of the well-known methods of drying common in the printing business. A method which we can recommend is to have a number of hooks with a point, upon which the taker-off can skewer each sheet as it is taken from the machine. When the point is filled with ten to fifteen sheets, the machine minder or machine-room labourer can hang them up by the hook to nails or lines near the ceiling. Thus the sheets are well dried between each printing. But in the parts where a gloss is required, it must be obtained by using thin varnish tints without any pomade, printed towards the finish of the work. The stiff varnish in the later greys of the sample have been the means of the mischief. Even these would not have done any injury if they had been thoroughly dried by the means indicated. The sheets which have been returned can be cleaned by washing off the paper, which has caught from the backs of the other sheets, with a soft rag and water. During cold weather it is advisable to be very careful in the use of thick varnish, as it requires a lot of drying. We have known instances of similar work being done in which the final gloss has been printed on at the finish, as a colourless varnish, and the effect has been very satisfactory.

WE are frequently asked for a book of reference upon the principles and practice of lithography, and have as frequently referred our enquirers to the old standard work by W. D. Richmond, being unable to recommend any more recent authority. In due course we hope to have dealt with the whole circle of the technology of the business in our chapters upon "Practical Lithography." It was with the knowledge of the widespread want of such a work that those chapters were compiled.

IN reply to Mr. W. W. Prince, of Gainsborough, the negative sent could not be used for any of the photo-litho processes, as it is far too clouded or veiled. We have previously recommended Mawson's photo-mechanical plates, and we are still of opinion that if you will persevere with them you will succeed. If you are able to work the wet collodion process you will find that it will give the best results. It is the plan adopted by all best workers in photo-mechanical processes.

SITUATIONS WANTED.

MANAGER.—Advertiser, with thorough knowledge of Litho, Letterpress, and Paper-bag Trades, is open to offer. Fifteen years' London experience. First-class references.—Replies "Z," BRITISH LITHOGRAPHER office, Leicester.

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Printed with Mandel Brothers' Lithographic Inks.
On Smith & Dec Laurin's Celebrated Chromo Paper.

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Johnstone, Scotland.



Colour N° 9. Light Brown,
Specimen of Chromo Lithography in II printings, drawn direct and printed at
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A JOURNAL FOR
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· PHOTOTYPER · STEEL & COPPER-PLATE · ENGRAVERS &c.

CONDUCTED BY ROBERT HILTON.]

VOL. III.—No. 16.

APRIL—MAY, 1894.

[CHARLES HARRAP, ASSISTANT EDITOR.

PRICE EIGHTPENCE.

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OUR SUPPLEMENTS.

CHROMO ON SMITH AND MC LAURIN'S
• • • • • GUMMED PAPER.



IN this issue will be found a supplement in colours worked on Messrs. Smith and McLaurin's chromo gummed paper. This supplement is produced in but a few workings, gold and six colours, drawn in the ordinary style of label work.

For years past we have heard complaints that ordinary gummed chromo papers stretch badly, do not "lift" bronze properly, and their printing qualities are not up to the mark. Recently we have used Messrs. Smith & McLaurin's gummed paper exclusively, and we find its printing qualities to be first-class, that it "lifts" bronze to perfection, and no difficulty has been found in

getting the best of register. We are given to understand that this special gummed chromo paper is largely used in the Manchester district for gummed cloth tickets and whiskey labels. Certainly in all our trials of this paper we have been thoroughly satisfied with the results, and can safely recommend it to all lithographers doing label work. An examination of the supplement should prove completely satisfactory to those interested.

This colour job was worked eight on a double-crown sheet, and twenty thousand copies were run off; the sheets registered as well as any ordinary job, and

our printer had not the slightest difficulty in handling them. The workings were in the following order: gold, yellow, red, blue, pink, brown, and grey, from retransferred stones.

Messrs. Smith & McLaurin have in preparation a handsome specimen book of chromo-litho and chromo-type work executed on these papers, which will be of considerable interest as well as use to printers everywhere.

CHROMO HEAD OF GIRL.

The portion of a showcard (reproduced by kind permission of Messrs. S. Dawson & Son, lithographers and printers, of Market-place, Dewsbury) was lithographed in the studios of the De Montfort Press Litho, and as will be readily seen, is almost exclusively drawn by Day's shading medium, once more practically demonstrating the great usefulness of this important adjunct to the artists' room. We should have liked to have shewn the whole of the card, as it was very effective and artistic in appearance. It was printed from re-transferred stones on Messrs. H. & L. Slater's chromo paper. Great credit is due to the makers for the softness and even coating of this paper. To get the right quality is a most important factor in printing, and when printers can be sure of a paper that is well seasoned and without flaws, they can generally produce good work. Messrs. Henry & Leigh Slater, of Bollington, Cheshire, make chromo papers of all weights and sizes, and will be happy to forward their catalogue to intending purchasers.

The colours were printed in the following order: yellow, flesh, red, blue, pink, light grey, dark brown, light brown, dark grey.

THE ILLUMINATED ADDRESS SUPPLEMENT

is a free and fresh design in the French style, and will be of use to artists as shewing how, with but little work, a neat and tasty effect may be obtained.

The original sketch of this design was worked on vellum, about four times the size, and we have been enabled to reproduce it by permission. We would refer our readers to the announcement in the open space.

This supplement was printed on Messrs. Smith and McLaurin's chromo paper, the merits of which we have often previously noted. This particular paper is specially adapted for almanac work, and can be had in any size from the works or their London warehouses in either rough or smooth finish on the back.

The printing was done from retransferred stones with Messrs. A. B. Fleming & Co.'s celebrated lithographic inks, the durability and brilliancy of which are admirable. These inks work very free on the machines, and thus show the superior manner in which they are ground and prepared. The printing was done in the following order: gold, yellow, flesh, red, light blue, brown, and grey.

IN MESSRS. MANDER BROS.' SPECIAL SUPPLEMENT

the superiority of the printing powers of their ink is shewn in a reproduction of different woods, tile, and marble. Messrs. Mander Brothers, whose name in the printing trade is a "household word," make a speciality of litho printing inks, and their endeavours to meet the growing wants of the trade in the way of special ready-mixed colours are much

to be commended. Any colour not stocked by them will be made to order, and price lists will be forwarded on application.

Their gloss varnish has also been used on the tiles at the foot, to their vast improvement. This varnish is a great acquisition, and should be in the hands of every printer. We can confidently recommend Messrs. Mander Brothers' litho inks to the trade. This supplement has been printed from retransferred stones, and twelve workings are used in it.

HULL ZINC PLATE CO.'S SUPPLEMENT.

Two more of the colours of the view of St. Mary's Church (given complete in a previous number), printed from zinc plates, are also shewn, being the second grey and the dark brown. These were printed from the Hull Zinc Plate Company's plates, at machine, from retransfers. Special attention is called to the second grey, where some very fine chalk work is shewn. This, on such a long run, is a further evidence of the value of their zinc plates for good work. They were both printed with Messrs. Mander Brothers' inks, on Smith & McLaurin's chromo paper.

These two plain colour supplements finish the set, and the whole set practically proves to the trade the utility of the Hull Company's zinc plates.

We have had the pleasure of seeing a new plate the Company have just introduced, having a texture like a chalk transfer paper, and much less dark in appearance than the old plates. The Company should find a ready sale for these, as they could largely be used for originals without the danger of transferring the chalk paper, accidents to which sometimes occur.

THE PAGE OF SUGGESTIONS, PLATE 6,

is full of useful bits to the designer. The French rococo ornamental bits being especially suggestive. This supplement was printed from retransferred stones, on Messrs. Grosvenor, Chater & Co.'s fine art "Acme" printing paper. The "Acme" paper is a printing paper that is familiar to all our best printers, and they have but one opinion about it, which is expressed by the quantity they use. It is a splendid paper, and takes the colour well.

THE ARMS SUPPLEMENT, PLATE 6,

is a further instalment of the arms of boroughs and towns, etc., drawn direct on stone, and worked at machine from retransferred stones. This supplement has been printed with Messrs. Gilby & Herrmann's well-known lithographic inks, which are "made in London." The fine permanent lake is a magnificent colour, and is "absolutely permanent," a most important assurance to printers. We ourselves have often been constrained to use language not strictly classical when certain inks were used which disappeared as if by magic when exposed to the light a few days. This colour *we do know*, from actual tests of exposure, is right. It is not so bright as the aniline colours, but "all is not gold that glitters," and what it loses in brightness it makes up in permanency.

We have had several communications asking us whether the book can be obtained from which we are taking the arms. We beg to remind our readers that we have already stated that these arms are being collected by correspondence and other means from

Printed with Mander Brothers' Lithographic Inks.
On Smith & Mr Laur's Celebrated Chromo Paper.

Works - Wolverhampton.
Johnstone, Scotland.



Colour N° 10. Dark Brown.
Specimen of Chromo Lithography in 11 printings, drawn direct and printed at
machine from plates Manufactured by the Patent Lithographic Zinc Plate Co Ltd Hull
at MONTGOMERY PRESS LITHO

the towns themselves, therefore they are or should be correct; at the same time, we do not hold ourselves responsible for any errors. Our friends must have patience, and in due course the whole series will be in their hands.

In the last number we gave a list of heraldic terms, in connection with which the following errors occurred: "Countercharged," etc., should be

Counterchanged: A field of two tinctures on which the charge or charges are changed in colour.

Unguled: The hoofs (not hoop) or ungules of beasts.

We herewith give explanations of a few of the mottoes used on arms.

A Deo et rege: From God and the king.

A fin: To the end.

Avi numerantur avorum: Like among like.

Benigno Numine: By God's blessing.

Candor dat viribus alias: Truth gives wings to strength.

Che sara sara: What will be, will be.

Constantia virtus: Constancy is virtue.

Deo date: Give to God.

Dieu avec nous: God with us.

Dieu et mon droit: God and my right.

Dieu me conduise: God is my guide.

Dominus providebit: The Lord will provide.

Dicit amor patriæ: The love of my country leads me on.

Dum spiro spero: While I live I hope.

En Dieu est ma fiance: In God is my truth.

Fari que sentias: Speak as you think.

Fidei coticula crux: The cross is the test of faith.

Forti et fideli nihil difficile: Nothing is difficult to the brave and faithful.

Fortuna sequatur: Let fortune follow.

Foy pour devoir: Faith for duty.

Gardez la foy: Guard the faith.

Gloria virtutis umbra: Glory is the shadow of virtue.

Ich Dien: I serve.

In solo Deo salus: In God only is salvation.

Jamais arriere: Never backwards.

Je le tiens: I hold it.

Justitiae soror fides: Truth is sister to justice.

Laus Deo: Praise be to God.

Le roy et l'estat: The king and the state.

Nec cupias, nec metuas: Neither desire nor fear.

Ne vile velis: Incline to nothing vile.

Non generant aquila columbas: Eagles do not breed pigeons.

Nunquam non paratus: Never unprepared.

Patitur qui vinxit: He who conquers, suffers.

Patrii virtutibus: By fraternal virtue.

Per mare per terras: By sea and land.

Semper fidelis: Always faithful.

Semper paratus: Always ready.

Sola nobilitas virtus: Virtue is the only nobility.

Suivez raison: Follow reason.

Soyez ferme: Be steadfast.

Tout bien ou rien: All or nothing.

Triumpho morte tam vita: I triumph in death as in life.

Un roi, une foy, une loy: One king, one faith, one law.

Vestigia nulla retrorsum: Never retreat.

Vincit veritas: Truth conquers.

Virtutis amore: For the love of virtue.

Virtutis fortuna comes: Fortune is the attendant on virtue.

Virtus ariete fortior: Virtue is stronger than a battering ram.

Vive ut vivas: Live that you may live.

Reference to the mottoes given above will explain the majority of those in use at the present time.

MONOTYPE.

(See "Etching, Drypoint, Mezzotint," on page 116; and monotype illustration.)

I take the opportunity of there being no plate required specially to illustrate the text in the present number, to show a monotype. It is the result of a method of playing by himself sometimes indulged in by the etcher. A monotype is a species of picture made upon the plate with printing ink, though the method may be said to be rather negative than positive. The plan generally followed, is to take a clean plate of convenient size and to cover the whole surface with ink, and then fashion the picture as you wipe off the ink with the finger wrapped in a bit of rag, a stump of wood, brushes, etc. The method is one of getting broad, strong, simple effects, and is occasionally useful. The ink should be thinner than for ordinary printing, so that it may work easily, and the proof is taken in the ordinary way, but with slight pressure, otherwise the ink is apt to run in the heaviest blacks. The black obtained by this method is very rich, stronger, in fact, than any other.

I came across this method of working on copper in Florence a dozen years ago, where it was practised by some young American etchers, rather, however, by way of pastime than as a serious form of art. As far as I know, Mr. Herkomer has been the first to illustrate it in his recent book on "Etching and Mezzotint Engraving," and he has carried the method further, with the aid of various brushes, than I have seen elsewhere. A reference to his book will show of what the method is capable in competent hands, though in my own practice I prefer to use it in the simplest way. My illustration was cleaned off entirely with the rag, the light on the water being got with the stump of a wooden match.

H. PATON.

THE collotype supplement in this number has been printed by the teacher of the Glasgow class, Mr. W. A. Denovan, on one of Messrs. Furnival & Co.'s new "British-built" collotype machines, in their showrooms at 111 Bothwell-street, Glasgow, where, we believe, one of the machines can always be seen in operation. Printers contemplating adding collotype to their business should see it before deciding what machine to buy.



PRINTERS who think that they cannot afford to subscribe for a trade journal are likely to become poorer as they grow older. The men who make most money, whether as employers or employés, are those who avail themselves of information, hints, and suggestions which are to be found in a good printing trade journal.—*American Bookmaker*.

YOUR journal, THE BRITISH LITHOGRAPHER, surpasses anything of the kind in France, and all in the trade are astonished at its value and circulation. I believe it is a good advertising medium, and will meet with success amongst French advertisers.—A. VALETTE, Lyons.



THE "RAPID" SUBSTITUTE FOR GRINDING LITHO STONES was noticed in a previous number. It is a remarkable invention, which we have since thoroughly tested. We have previously given the properties and proportions of its ingredients, and described its use, and now give a short description of its powers.

The stone with the old work on should first be washed out thoroughly clean with turps in the ordinary manner, a little finely powdered pumice sprinkled over it, and sufficient "Rapid" (having previously been well shaken) poured on. The stone must then be briskly rubbed over the entire surface for two to five minutes, according to size, with the felt rubber; a little more "Rapid" added from time to time to keep it moist. When finished, the stone should be thoroughly rinsed with water, and it is then ready for a new job. We have fully tested it ourselves, and can speak with confidence as to its value. One transferer prepared a stone, which had had old work on, in two minutes; and transferred a new job, which, when rolled up in the usual manner, was perfect. It will at once be seen that there is a great saving of time and also stone. One stone would practically last for ever. Messrs. Hunter Brothers, of 112 Fore-street, London, E.C., are the sole agents, from whom samples and full particulars can be obtained.

HORSELL'S "LITHEASER" is a new material for lithographers, especially useful in helping the ink to work flat, solid, and sharp. It prevents water from mixing with the ink, and it is claimed that it keeps colours from running when varnished, and works in solids or tints without affecting the body of the ink. It also assists the drying of inks without tendency to clogging; helps to keep rollers pliable; and, lastly, assists distribution and keeps inks mellow in working. Varnish only need be used for reducing inks when "Litheaser" is used, the composition itself being a drier. About $\frac{1}{2}$ -ounce to 1-lb. of ink is the quantity recommended to be used.

MR. THOMAS BROAD, JUN., 30 St. Bride-street, E.C., has sent us for trial samples of the transfer paper advertised by him elsewhere in the B.L. The plate and stone transfer is excellent, very evenly coated, and, in fact, may be justly termed "The Perfect." His "Hot Rolled" is especially adapted for retranfer from stone to stone, and is remarkably cheap for such a first-class article. We have also tried the transfer paper for zinc work, and find it admirably suited for the purpose. Mr. Broad will be happy to forward prices and samples on application.

THE specimens of transposing black to white by the etching process sent us by Mr. James Bewick, of Glasgow, are all excellent examples of this class of work. Mr. Bewick prefers the etching process to others that have been described in the B.L., and always practises it, and the results, as shewn in his productions are always good alike, but not better than we have seen in other methods. Apparently the method has not always so much to do with results as the amount of practice the operator has had.

ALL BY TRADES UNIONISM.—The most marked effect of trade union effort has been on wages and hours of labour. This has not been confined to the men who formed the unions. The auxiliary occupations have largely participated in these benefits, while those in the same trade have all shared alike in them, whether members of the union or not. The rules and regulations of the unions have gradually become the customs of our industrial world, and have almost acquired the respect and force of law. While these changes of higher wages and fewer hours have been made, the manufacturing and commercial interests of the country have increased by leaps and bounds. The stability of labour, the unity of purpose, the organisation of definite and trustworthy rules, the improvement in skill, the heightened self-respect and dignity of labour have tended to improve the forces and productive power in all our industries. The great qualities of enterprise, resource, energy, and capital on the part of employers would have availed little had there not been organised labour in every staple trade.

WE have received from Mr. J. W. Blakey, of Scarborough, the Christmas number of his well-known journal, *The Angler*. It is embellished with a handsome coloured supplement of "A Salmon Trout," printed from wood blocks. The plate is printed by Messrs. B. Fawcett & Co., of Driffield, and is in every respect an admirable piece of work, the markings of the fish being remarkably true to nature. The journal itself is neatly arranged and carefully printed. Mr. Blakey also sent us some other coloured plates similar to the one already noticed, two of them, "Perch" and "Common Trout," being even better specimens of colour work than the one in the Christmas number. The contents of *The Angler* are well written and full of racy anecdotes of the sport, and the journal should be in the hands of every angler.

IN connection with the Glasgow and West of Scotland Technical College, Mr. William Carter gave a special lecture recently on "Lithographic Machinery, Ancient and Modern." Mr. R. M. Stephen presided, and there was a good attendance. Mr. Carter dealt with the progress in lithographic machinery in the last fifty years, and by the aid of lime-light views shewed numerous examples of the different machines used throughout the world. It was, said Mr. Carter, in Glasgow that the first cylinder machine was used in Britain.

WITH the number just published of THE BRITISH LITHOGRAPHER some admirable specimens of chromolithography are given, and altogether it is an unrivalled specimen of what such a trade periodical should be.—*Fame*.

JUST a line to say how pleased I am with the B.L. just published; the colour work is very nice and clean.—W. BURNELL, Gloucester.

SPECIMEN OF COLLOTYPE.

Printed at DEMONSTRATION LECTURE AT GLASGOW, by WM. A. DENOVAN,
on FURNIVAL & CO.'s New Demy Collotype Printing Machine.



Our Technical Instructors.

WILLIAM A. DENOVAN, GLASGOW.

THE subject of this notice, of whom we present a portrait, has recently come suddenly to the front as a lecturer on collotype work in connection with printing, and though comparatively a young man, has seen a good deal of the world in his time, and his story will no doubt interest our readers.

He was born in 1862 at Boston, Mass., U.S.A., of Scotch parentage, and was educated at the common school in the town of Danvers, to which town his parents moved shortly after his birth. His father died when the subject of our notice was about nine years of age. Then he had to work on a farm in summer and attend school in the winter.

When thirteen years of age, he started work with the Heliotype Printing Company, and after attending a lecture on heliogravure printing by Mr. Ernest Edwards, he commenced experiments with a view to finding out for himself what was then a secret process. After nearly two years with the Heliotype Company, he drifted round to the Land o' Cakes, and at Glasgow obtained a situation with Messrs. Maclure, Macdonald & Co. When they commenced collotype, some twelve or fourteen years ago, he sought and obtained permission to join their collotype staff, and, beginning at the lowest place, worked up until, when he left them about two years ago, to form, with two other young men, the Heliogravure Printing Company, he held the position of foreman of the collotype department. The process of making the plates was held as a secret by the German operator who introduced the process, but, with true Scotch perseverance, Mr. Denovan set to work to experiment at home, and, after many trials, found out the method. It will thus be seen that from actual experience of photography,

plate making, machine and hand-printing, he is able to speak with no uncertain sound about collotype work. His class at Glasgow was a decided success; both teacher and students were enthusiastic about their work, so that with the valuable assistance of Mr. H. Smith (Messrs. Furnival's agent), in the loan of machinery, plant, etc., a good result was more than assured. We sincerely hope that Mr. Smith, who promoted this class, will see his way to introduce it into other towns, which we think, looking at the well-known enterprise and generosity of his firm, might easily be accomplished in most of the larger centres this side of the border. Elsewhere in this issue we give a *résumé* of the closing lectures of the course undertaken by Mr. Denovan.



W. A. DENOVAN.

on the subsequent improvements in his invention. But he did not think it possible that anyone would discover his method of photographing directly on the engraved plate, and neglected to patent this improvement, which stands in some other name. M. Meisenbach sold the business he established in London for £14,000, and has now practically retired.

EACH number of the B.L. shews a marked improvement, and the journal will become a valuable addition to the library of any litho artist, and be of great service in time to come.—J. L. LEWORTHY, Ipswich.



Practical Collotype Printing.

BY W. A. DENOVAN.



THE FIFTH LECTURE of the course on "Practical Collotype Printing" took place on January 15th, in Messrs. Furnival & Co.'s showroom, Glasgow, the demonstration subject being "Preparing the Machine for Work." To enable the lecturer to fully and accurately describe this interesting process of collotype printing, Messrs. Furnival & Co. specially prepared a new machine for this purpose. It is a demy size, and has all the latest and most ingenious improvements that it is possible to conceive. There was a very full attendance of members, with the addition of several visitors.

Mr. Denovan remarked that they now passed from the chemical operations outlined in the preceding lecture and demonstration to the mechanical department of collotype printing. The

PREPARATION OF THE PLATES

for the machine must be very carefully done as regarded uniformity of coating and exposure for transferring of the image, for the little dodges in hand-printing find no place in the mechanical movement of the machine. True, a skilful minder might, by judicious use of ammonia, soak in what was termed local manipulation, and so dodge an inferior plate as to obtain wonderful results, but if quality and quantity was the password, he had enough to do to contend with the natural "cussedness" of the process, without attempting to do what should be done before the plate arrived at the machine. The lecturer then proceeded to prepare the machine for work. Having described the preparation of the rollers, etc., the plate was put into the machine, and a rough copy taken. Afterwards the mask or shield was described, together with the mode of preparing it. Unfortunately, no actual prints were secured, but at the next lecture Mr. Denovan said the machine would be fully at work, and copies printed.

It will doubtless interest the printing, and especially the lithographic, trade to have a short description of this

NEW COLLOTYPE PRINTING MACHINE.

As it stands in Messrs. Furnival's showrooms, it looks very handsome and exceedingly well finished, all the parts being carefully studied and made as simple as possible. It is what the makers call a demy size, but

will actually print a royal sheet, 20×25 inches. It is double-geared, and all the racks and wheels machine-cut. The cylinder surface is highly polished by a process which is a speciality of the makers. The machine is arranged for a single, double, or triple inking, and by a very ingenious device the cylinder can be made to take two impressions automatically. There is what is called a masking frame, and also a lifting feed-board. The machine is fitted with two sets of rollers which are used in this special process—one set covered with composition, and the other with ordinary litho French calf-skin. The former set is placed in front of the cylinder in order to deposit a heavy body of ink upon the plate, and the latter immediately behind the cylinder, the object of this being to tone or ink the plate. The machine is fitted with the usual distributors, and has a very ingenious contrivance for pressure. This is secured with a pair of very flexible carriage springs, and it is also fitted with a clever cylinder-check arrangement and a cylinder push-home rod and break. The machine is, generally, built upon the lines of the ordinary "Express" litho machine, so largely manufactured by Messrs. Furnival & Co., and has a very heavy and massive girder directly under the cylinder, which gives extreme strength and rigidity to the machine. There are also two broad runner rails which carry the runners, and the latter in their turn support the carriage. The framing is well and proportionately designed, and the general appearance of the machine gives an idea of compactness in detail, combined with perfection in construction.

THE SIXTH LECTURE and second demonstration, by Mr. W. A. Denovan, was given in Messrs. Furnival's showroom, on January 29th. Notwithstanding the eminently uncomfortable state of the weather there was a large attendance, thus demonstrating that a very lively interest is being excited among the Glasgow printers and lithographers in this fascinating branch of the printers' art.

The lecture was subsidiary to the demonstration, Mr. Denovan occupying most of the evening in going through the

PROCESS OF PRINTING A NATURE STUDY in a fairly successful manner, having difficulties to contend with in the shape of a weak plate.

SOAKING THE PLATE.

The plate is of glass, about half an inch thick, with a gelatine film on the surface into which the image is engraved by photography. This was shown placed on the machine, and was soaking in a composition composed of equal parts of glycerine and water. The plate should be allowed to lie in this for ten minutes, or as long as the printer liked—there was practically no limit. There was, of course, a danger of oversoaking the plates, but plates which were properly prepared would take almost any amount of soaking, provided the operator did not introduce liquor ammonia. Liquor ammonia soaking took from twenty-five to thirty minutes, and the composition was something like 300 parts of glycerine to 100 of water, and perhaps 10 to 20 parts of liquor ammonia.

DRYING THE PLATE.

The lecturer then proceeded to remove the soaking, and in taking the superfluous moisture off the plate he pointed out that it was necessary to dab the drying cloth on the plate, as the gelatine film was very delicate, and if it were rubbed up and down it would in all probability be damaged.

PRINTING.

He then proceeded with the printing, the first impression showing a little scum round the edges. This was removed by a further soaking in a little glycerine and water, equal parts, into which had been introduced as much salt as the soak would take up. It was very seldom the case that one could get a collotype plate to fit into the machine and run right off. Perhaps nine times out of ten they would require to "fake it up," as the lithographers say, to get good results. He had very seldom had a plate that he could put in the machine and go straight away with the printing. There were cases where such had been done, but they were the exceptions.

THE MARGINS.

He next went on to explain the use of the shield which he had fixed over the feeding cylinder, covering every part except that on which the plate was to print. This shield was to keep the margins clean; but it was only required in cases where the paper projected over the printing plate; even in the present case after some printing it was unnecessary, as the rollers, by repeatedly going over the plate, had licked up all the grease that was about the margins at the start.

TEMPERATURE.

In places where collotyping was wrought regularly, the room would be kept in such a temperature that they could get started with as little difficulty as possible. There was also an arrangement for introducing gas jets beneath the plate and thus bringing it up to a proper working temperature. This was of great use when the machine had to be started early in the morning.

DAMPING.

Mr. Dean (of Gilmour & Dean) asked why it was that in collotype printing there was no attention to damping as they had in lithographing? He had only observed the lecturer damp the plate at the beginning of the printing.

Mr. Denovan said that the plate was damped with glycerine, and that was a liquid which did not easily dry. The reason that they did not require to damp was because the plate itself was composed of a soft gelatine substance, and it absorbed and retained for a long time the moisture that was given to it in the first instance. He had himself printed 800 impressions without damping, and he had seen 1500 copies run off with the original damping. In this latter case the paper was damped at the outset to the same ratio as the plate, and the machine was just kept on running. The 800 run was printed on imitation hand-made paper. This was an extremely hard paper, which did not absorb the moisture, and the consequence was that with such paper they could get long runs. With chromo papers one required to damp much oftener; this they would understand, as the ingredients with which chromo paper was prepared were such as absorbed more moisture than the ordinary paper. A great deal depended upon the paper that one used for the success of collotype printing.

MORE ABOUT THE PLATE.

In reply to a further question by Mr. Dean, the lecturer stated that the image on the plate was not in relief, but was depressed as in copper-plate, and the reason that the ink clung to the plate was because it was composed of oxide of chromate, and the carbonised gelatine threw off the moisture and retained the printing ink, while the portions where the light had not acted threw off the printing ink and absorbed the moisture.

PRESERVING THE PLATES.

Relying to a question from another gentleman in the audience, Mr. Denovan said collotype printers found that the best way to preserve a plate was just to leave it rolled up in a coating of black ink, and let it lie as it was, and before using it simply to wash it with naphtha, and dry off the grease thoroughly, and let it re-soak. He understood, however, that there were some firms on the Continent who put over their plates a composition of gum arabic and glycerine.

At the close of the evening Mr. Denovan intimated that it had been thought wise that in the last lecture of this course he should accede to the request of the members of the class and give a repetition of the demonstration of the preparation of printing plates, and this would be given in Messrs. Furnival's premises instead of the Typographical Hall.

THE SEVENTH LECTURE of the series was given on February 12th, in the showroom of Messrs. Furnival and Co. There was a full attendance of members of the class, and in addition a number of employers and overseers were present.

MACHINE PRINTING.

Machine printing was again demonstrated; but before proceeding to print off copies from the plate the lecturer explained that the plate had been fitted to the bed of the machine, in accordance with the instructions of the makers. These were that the plate was to be placed in the machine so that a straight iron rod just tipped it, and that the packing of the cylinder must tip another rod slightly cut out. He

found, however, that it was better to work with an additional sheet of packing than the exact number required to bring it up to the level of the rod. He then went on to explain that it was desirable to put on the ink and allow the machine to run for a considerable time in order to work the ink well into the rollers. As soon as the point of pressure had been ascertained by means of the rod across the cylinder the work was begun and continued until a perfect impression, as regarded pressure and not the collotype, had been attained. In order to bring the plate to a correct standard when it was black it might be soaked with a composition, in equal proportions of glycerine and water, or with one consisting of common salt in addition to the soaking solution. Ammonia was used for the depths of the picture, and salt to give crispness and clearness. These two were perhaps the best substances which could be used.

Mr. Denovan then proceeded to print off several copies from the plate. The subject was a pleasure steamer proceeding down the Firth with a large number of passengers on board. The result of the work was satisfactory in the extreme, and reflected much credit on the skilful manipulation which characterised Mr. Denovan's preparation. The finest lines in the plate stood out with great clearness, and the picture was realistic to a degree. Several copies were thrown off after the plate had been inked two or three times, and the effect of this repetition was to deepen the tint, while double impression was given to a number of copies, thus securing greater brilliancy to the colour and a sharper outline to the subjects.

At the close of the demonstration Mr. Denovan answered several questions. He said it was quite possible to make a transfer in the lighter parts of the collotype negative, but not in the dark parts of the printing plate as it stood, although if one wished to transfer anything to the sky or water on the plate it was possible to do so. The transfer might be taken from a lithographic stone or from type. It was advisable to begin work with a very stiff ink, for if a much reduced ink was used at the commencement, it would be necessary to reduce the plate with ammonia so as to bring it into a condition to take the ink properly.

On the motion of Mr. Dean, Mr. Denovan was heartily thanked for his demonstration.

During the evening it was stated that Messrs. Furnival have secured the entire contract for fitting up the new collotype department of Messrs. Adamson and Sons, photographers, Rothesay, and are supplying the firm with the demy machine which was used for this demonstration.

CLOSING LECTURE.

THE last lecture of the course was delivered in the lecture hall of the Glasgow Typographical Society on February 26th, by Mr. W. A. Denovan. There was a good attendance of students, presided over (in the absence of Mr. Dean) by Mr. Gardner.

Mr. Denovan at the outset rehearsed his former remarks on the preparation of the collotype plates, exhibiting and describing the melting boiler and drying stove, and then went on to give a description of the plates to be used. At one time they were an

inch in thickness, but were gradually reduced to three-quarters of an inch, and now he preferred to work with a half-inch plate, although sometimes even less than that thickness was used. The finer the plate the easier was the manipulation.

ORDINARY POLISHED GLASS

seemed to answer the purpose for plates, which were generally ground with emery powder. As regarded the cleaning of the plates, plenty of water and elbow grease was about as good a process as could be desired. Coating the plate was next explained at considerable detail, and the lecturer went on to point out the usual errors generally made in the manipulation of the process and their best remedy. He pointed out that wet plate negatives sometimes shewed spots, comets, pinholes, unsharpness, were often thin at one side and dense at the other, and marred by a variety of other defects. These arose chiefly from impurities in the atmosphere, the bath being too strong or containing too much iodide, too much light in the dark room, and other circumstances; and emphasis was laid on the necessity for keeping the room in which the process was being conducted perfectly clean. In the dry plates, staining and flatness were the defects, the first being caused by improper washing, the second by too much light being admitted into the dark room, and the flatness of image due to over-exposure. He pointed out that the last was frequently the mistake of those who were accustomed to the wet plate, as he had found from personal experience.

ERRORS IN PLATE MAKING

were next dealt with. In the first preparation, dust might work its way up into the plate while it was in the stove and cause dust spots; coagulation might be caused in the mixing of the solution by adding the ingredients too quickly; and under and over-exposure, emery powder in the pores of the glass, and the stripping of films, were touched upon and their remedies explained. In the second preparation the lecturer showed how, among other things, a different grain on the same plate, wave marks, streaks, crystallisation, flat and grey prints, the refusal of the plate to ink, or the fact that it took too much ink, were caused, and under the heading of errors in printing, skiting and marking of the rollers, slurring, breakage, loss of tone, clogging, and other defects were liable to arise.

At the close of the lecture, which was not the least interesting of the eight which Mr. Denovan has delivered, the chairman, in proposing a vote of thanks to the lecturer, bore testimony to the value which the series undoubtedly possessed to those who had been privileged to listen to them. Mr. Denovan had gone as far as it was possible to go, and had shewn them, both by lecture and experiment, what they should do and what they should avoid. The vote of thanks was cordially given, and Mr. Denovan briefly responded.

A similar compliment was paid to Mr. Harry Smith, to whose energy the inception and ultimate success of the lectures were chiefly due, and to the firm of Messrs. Furnival & Co., for the handsome manner in which they had come forward and assisted in carrying the course to a successful issue.

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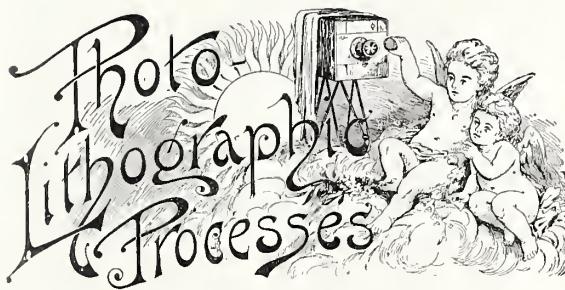


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WILSON & SONS LTD., LEICESTER.



COLLOTYPE—(continued).

CHAPTER XVIII.

REVERSING THE NEGATIVE FOR COLLOTYPE.

LN preparing negatives for the collotype process, it is essential that such negatives are capable of reversal. Since a negative is itself a reversal of the original, it is clear that a print from such negative gives a positive image or copy of the original in its proper position, thus producing the well-known form of photograph. If, therefore, an ordinary negative be used in its general way, the photographic print upon the collotype film will be a positive, and the prints taken from it, as in lithography, will be reversed. In most subjects such reversal would be an unpardonable error; but in some few cases the reversal is not of such imminent importance, and collotypists have finished the work in a reversed state. As an example may be cited the views of East Anglia, to be found in the Great Eastern Railway Company's carriages. In a general sense these reversals make as pretty pictures as positives would do, but they have the disadvantage of representing the objects on the left-hand of a subject turned over to the right. Thus, a church with the adjoining town may appear on the wrong side of a river. Therefore, if collotype (or zincogravure) prints are to be realistic, the negatives must be reversed.

The methods of reversal may be summed up under the following heads:—

1. Reversing the sensitive plate.
2. " by the use of Eastman's films.
3. " " by the use of Froedman's films.
4. " " by the use of Pumphrey's films.
5. " " by reflection in the camera.
6. " " by stripping the plate.
7. " " by using stripping plates.
8. " " by the powder process.
9. " " by transparency.
10. " " by transparency through carbon process.

Taking these various methods in rotation, the following brief summaries shew the details of manipulation:—

I. REVERSING THE SENSITIVE PLATE.

In this method the sensitive plate is simply turned in the camera, with the glass side to the lens, instead of the film side. In so doing, the glass must be very perfect—without flaw, scratch, or bubble—and must be thoroughly dusted before exposure. The practical

photographer will understand at once that in exposing the plate this way, the negative is formed from the back of the film, and becomes a sensitive impression in the film, rather than upon the film; so that in developing such a negative, the density must be judged by transmitted light almost entirely, and not in the usual way only. In preparing such a negative, an amount of allowance must be made after focussing upon the ground glass screen, for the difference of position which will follow between the film and the ground glass screen. The camera must be racked back, in compensation for the thickness of the glass, to give the proper focus. If any manipulator becomes an adept in this process, it is far easier in the after processes, and does away with a lot of possibilities of injury to the negative.

2. REVERSING BY THE USE OF EASTMAN'S FILMS.

This process is probably, next to the one just described (1), the easiest where stripping and reversing the film are resorted to. Other methods of stripping will follow (6), (7). The Eastman film is prepared like a transfer paper or decalcomany paper, with a coating of soluble gelatine upon a tough paper, and upon the soluble layer is spread the insoluble gelatine emulsion. Such prepared film may be exposed in contact with a good plate-glass support, or in a roller slide. After exposure, the development is conducted in the usual way, except that alum must not be used before the film has been stripped. The negative having been fixed and washed, it is then placed face downwards upon a collodionised sheet of glass. The latter, after coating with collodion, should stand in water until all greasiness disappears. The negative lying on this collodion surface, under water, is brought out of the water in position on the glass plate, and is partially dried by putting on the back a sheet of blotting paper, and upon the blotting paper a sheet of oiled paper—the latter forming a substantial surface to allow the application of a squeegee to force out the water. The drying is completed by removing the wet blotting paper, and replacing it by another sheet of blotting paper, upon which is placed a glass plate with a weight upon it. As in lithographic transferring, the soluble gelatine first coating on the film begins to dissolve. The dissolution is completed by putting the two glass plates in warm water, not exceeding 130°F. (54.39°C.). The upper plate and weight are removed, and gradually the paper backing floats off. A little more gentle washing in hot water finally removes all the soluble gelatine, leaving the negative (formed in the insoluble gelatine emulsion) mounted upon the collodionised glass plate in a reversed position, ready for use when dry.

3. REVERSING BY THE USE OF FROEDMAN'S FILMS.

These films are used by themselves, without the necessity of mounting the film finally upon glass, as is done with Eastman's films. Froedman's films are gelatine, probably hardened by a bichromate, which gives the film a yellow tinge, not at all to be desired in collotype. The method of taking the original negative, etc., are purely ordinary photographic manipulations. The film is difficult to work in the developing bath, and it is far better to dry it by the

use of spirit. With ordinary care these films are easily handled, and may be kept for preservation in a book.

4. REVERSING BY USE OF PUMPHREY'S FILMS.

These films combine the characteristics of both of the above two films. Like Eastman's, they consist of a foundation of paper, upon which is spread an adhesive film of indiarubber; upon this the soluble gelatine is spread, and finally the gelatine emulsion. The other side of the paper is coated with a waterproof varnish. These films may be exposed, as Eastman's, or between two glass plates, and developed in the ordinary way. These films are tenacious, and stand a fair amount of rough usage. After development, etc., the washed film is taken from the bath and pasted on to a perfectly smooth card. The film paper backing should be almost dry before pasting on the card, to prevent the card becoming warped. When fastened on the card, strips of gummed paper may be put along the edges, just overlapping the film and fastening it the more securely to the card, to prevent the film leaving its support before it is dry and varnished. When dry it may be varnished. And, finally, the film itself can be taken off by cutting through at the edges and slipping the knife blade in between the film and the paper support. After loosening it all round, it may be stripped away from the paper, which is left fastened on the pasteboard. The resultant film can be used the same as Froedman's, and can be printed from either side.

5. REVERSING BY REFLECTION IN THE CAMERA.

This process is one surrounded by considerable expense and trouble, although, like the first process, when the negative is once taken there is no further trouble attached to it. If a photographer will go to the initial expenditure of a large mirror, and have the camera properly constructed, the production of negatives for collotype and zinc-block process engraving becomes a much easier method than by using either the films or the stripping processes.

The mirror used for reflection in the camera is placed exactly at an angle of 45° with the plane of the sensitive plate. This is accomplished by having a special triangular box, fastened upon the front of the camera, with its "base" on the camera, its "perpendicular" projecting exactly at right angles from the front of the camera, and its "hypotenuse" obliquely at 45° with the front of the camera. Inside this "hypotenuse" the mirror is fastened. In the "perpendicular" the lens is fastened, and the "base" is left open for the transmission of the image upon the sensitive plate. Of course the upper and undersides of the triangular box are closed perfectly, and the whole interior, with the exception of the mirror, treated with black, as a part of the camera itself.

The use of a mirror in this way causes a direct reversal of all images thrown upon it. Since the camera lens reverses all rays of light in their passage, the mirror simply counteracts the reversal and causes all subjects to be projected upon the sensitive plate in their original or normal position.

The mirror is made by spreading a film of silver upon a plate of glass. The glass must be perfectly flat and true, and the silver film highly polished. The

polished surface of silver is used as the mirror, and after use it must be taken out and warmed slightly at an open fire, then wrapped up in a piece of thick fabric previously warmed—plush, velveteen, or fine flannel will do. Finally, wrap all in a waterproof covering and put away in an air-tight box. Should the silver get tarnished, it must be polished off with chamois leather and rouge. The leather should be made up into a dabber—similar to the copperplate ink "dolly"—with cotton wool inside. In use, all the materials must be perfectly dry, and the polishing done very gently. These mirrors are expensive, and may be made by a careful manipulator.

[To be continued.]

A Strike.

IN FIVE ACTS.

A CONTEMPORARY across "the silver streak" gives a description of a novel strike—or rather a strike declared for novel reasons—in a prominent printing office in Lyons. The report is divided into five acts in dramatic fashion, and reads somewhat as follows:—

FIRST ACT.

The lithographers employed by the firm of M. Ramboz demanded the right *themselves* to appoint their foremen.

M. Ramboz conceded this right to the men, and the foremen were appointed by them.

SECOND ACT.

The workmen employed by M. Ramboz then demanded that the foremen thus appointed should have absolute authority, under their orders, to appoint or discharge workmen.

M. Ramboz continued in his yielding policy and accepted this new demand.

THIRD ACT.

One of the lithographers of M. Ramboz absented himself from work twelve days without notice.

M. Ramboz, who did not remember receiving any word from him, dismissed him.

FOURTH ACT.

The lithographers of M. Ramboz insisted that the workman should be reinstated in his position.

M. Ramboz, who found that the yielding he had shewn, if continued, would probably lead to his lithographers demanding that he, as employer, should be degraded to the ranks himself, refused this new demand, and maintained his position.

FIFTH ACT.

A strike is declared. Another result is that the streets are deluged with handbills, placing M. Ramboz under the ban of the Society, and congratulating his accusers.

The leading trade journal of Lyons has published a lengthy correspondence on the question, as to whether an employer has or has not the right to appoint his foremen, and it is interesting to hear what is being said on both sides; the present at least is not a favourable time to discuss such a theory.

Correspondence.

"Orara," Dulwich-street, Dulwich-hill,
Sydney, N.S.W., Australia.
To the Editor of THE BRITISH LITHOGRAPHER.

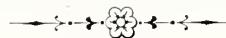
SIR,—I am requested by the Sydney Lithographic Society to direct your attention to a number of inaccuracies occurring in a biography headed "An Australian Lithographic School" that appeared in your August-September number. While allowing considerable license to a biographer, in this case your correspondent has so far exceeded this license and shown such a limited knowledge of lithographic matters in general that in justice to the trade some disclaimer is necessary. In speaking of the revolution in the trade, caused by the appearance of the "Conisbee" machine, your correspondent has omitted to mention that this very machine had been working in the *Herald* office for some two years previous to its being rechristened the "Wolf," and for some considerable time machines had been worked successfully by Messrs. Gibbs, Shallard & Co., and by Messrs. John Sands, of this city, while in the neighbouring city of Melbourne, Messrs. Sands and McDougall, Charles Troedel, Fergusson & Mitchell, De Gruchy & Co., and others, were all doing their work with machines. The reference to photo-lithography is also misleading, for at the time indicated, 1875 (without detracting anything from the gentleman concerned), the value of photo-lithography was recognised and practised by nearly all lithographers. It is now a matter of history how photo-lithography was discovered simultaneously in England and by Mr. Moon, photographer of the Lands Office, Melbourne, full details of the process being published at the time, somewhere about 1870. But it is more particularly in reference to this Australian School of Lithography that I am directed to correct your correspondent; for as I was mainly instrumental in having this class established, having taken all the initiatory steps, I am in a position to state that it is of no benefit whatever to the trade, and as at present constituted the very antithesis of what was originally intended. What was desired by the trade was a school to impart a scientific knowledge, or I may say to teach the chemistry of lithography, not elementary lithography which can be much better taught in a workshop than in hour lessons in class. Your correspondent also states that the classes have an average attendance of thirty-five to forty each week; this statement is so much opposed to fact, that I have endeavoured to obtain an official record of the attendance, but as parliament was not sitting I could not. If I can get it later on I will forward it. Now as to this thirty-five to forty being mostly journeymen, your correspondent forgets to state whether they are journeymen stone-polishers or journeymen labourers, for they are certainly not journeymen litho-printers as he would lead you to believe, for this class has never been recognised except as a menace to the legitimate worker, by imparting a rudimentary knowledge of lithography without the restriction of an apprenticeship. I trust you will give this letter a place in your

journal, for its popularity has not been increased by the article under notice, and if I may make a suggestion, any further communication relating to trade matters in Australia would be more reliable if obtained through the trade societies in Sydney or Melbourne.*

I am, sir, yours obediently,

ALFRED M. HANDS.

[* The suggestion to apply to trade societies for information we have thoroughly tested in the last two and a half years, and found to be of no use whatever. Of all the branches of the lithographers and artists' societies in Great Britain to whose secretaries we have applied for information and news on trade topics, all who have taken notice of our application could be counted on the fingers of one hand; but if we happen to make a slip occasionally they come down on us like the proverbial thousand of bricks. If they will come forward and speak for themselves on trade topics, our columns are always open to them for any items of news they can send us, and also for the discussion of trade topics so long as conducted impartially.—ED.]



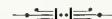
The Business Cloud Lightening.

WE find that many lithographers agree with us that there is a "silver lining to the dark cloud" that has recently hung so heavily over their trade. The competition of the foreigner has aroused both employers and employed to the danger of their position, and both are setting themselves to work to meet the common enemy. The employers are looking all round for better methods, means of economising, and are shewing an anxiety to get hold of the latest and best thing in machinery and manipulation; while the workmen are finding out that they must put their best foot foremost and help their employers if they are to keep, or in some cases, win back their employment. Hitherto, the policy of many men—a policy winked at, if not encouraged by trade unionism—has been to do the least possible work and get the most pay for it—the principle of the cardinal doctrine of the Free Traders of fifty years ago; "to buy in the cheapest and sell in the dearest market," get the most and give the least for your money or labour. But that will not work where there is free competition on one side and a closed market on the other, and where there are low wages and long hours, and child and women labour opposed to the short hours and large wages, and restricted women and interdicted child labour. So the workmen find they must do their best "to keep their berths," not because their employers may turn them out and get better men, but because if they do not there will be neither work nor men to turn out of either their workshops or their country, but a good deal to turn into it. And so we hear that the men are finding it necessary to get the most, not the least out of the machines, and are turning out in some cases twenty-five per cent. more. This makes all the difference between a good profit and a serious loss, and would keep much in this country that is now going out.—B. & C. P. & S.

ALLOW me to express my appreciation of the contents and finish of the B.L. It makes me more than ever proud of my trade.—G. BORRETT, Stoke-on-Trent.

Specimens.

[Will our friends kindly remember to send their specimens either TIGHTLY ROLLED OR FLAT BETWEEN BOARDS; the cost is but a trifle more, and for review they gain in being presented as they come from the machine. If sent unprotected, specimens are usually so crushed and disfigured as to be utterly unfit for criticism or preservation.]



SPECIALLY attractive is the card calendar sent us from the litho establishment at Kaufbueren, Bavaria. It measures 9 x 7½ inches, and shows a plain line border in light and dark greens and gold, with the two lines of lettering in white relief. The calendar is in weekly leaflets, with space to each day for memoranda, and the block is cut out in a fancy imitation deckle edge. On the front of the weekly block is a handsome design emblematic of the four quarters of the world, represented of course by figures of the fair sex: Europe and Asia appearing on one side, Africa and America on the other, and between the two is a flowing ribbon bearing the date of the year, the trade mark of the firm, and facsimiles of different medals that have been obtained at various exhibitions. Right at the back of the block is a beautiful female figure in half-tone, printed in black and flesh tint on a solid silver ground, relieved by a margin of light buff tint. On the card itself are views of the interior and exterior of the firm's works. The execution of the chromo-litho design on the front is wonderfully good, and the entire calendar is calculated to attract and fix attention.

A VERY handsome chromo lithographed calendar for '94 has been sent us by Mr. Francis J. Fenn, Whitgift Printing Works, Croydon. A special feature of it is a series of eight humorous cartoons telling the history of the invention of printing. Some verses respecting the invention of printing accompany the cartoon. These cartoons are in circular shape, are photo-lithographed, and are arranged between the panels containing Mr. Fenn's business announcements, which are printed in black and gold on red, buff, and azure tints. The monthly leaflet occupies the centre between two of the cartoons, and postal and other information are contained in two other panels. The design, which is on an imperial folio card, is in very attractive style, the colour scheme very effective, the artistic treatment excellent, and the printing in every respect all that could be desired. Mr. Fenn's business card accompanying the calendar is an excellent specimen of well-displayed lettering, and first-class printing (direct from plate) on white card with rounded corners.

A BATCH of specimens of various classes of litho work are to hand from Messrs. R. S. Johnston & Co., Belfast, who are well known as colour printers to the trade, giving attention more especially to label and showcard work. In the latter class they undertake gelatinating, varnishing, mounting, metal-edging and framing, and use a special washable gelatine which is

claimed to be a perfect substitute for glass, without the weight and risk of breakage. Another of their specialities is "Vitrine" window transparencies for advertising purposes, and window decorations for private and public buildings, churches, chapels, etc., for use in any position where it is desirable to exclude unpleasant views, etc. They also make ornaments, bands, and tickets for the textile trades, etc.; skeleton gold and silver borders for box manufacturers and the confectionery trade; and in general colour printing, especially in posters, covers for trade catalogues, etc., their work is remarkably good. The label work submitted is amongst the best we have ever seen, whether in taste or variety of designs, clearness of lettering, or bright and clean colouring; and all admirably printed. The transparency work is remarkably good also, in fact, so far as regards special adaptation to its purpose, we have rarely seen anything that could surpass it. Accompanying the parcel is the firm's special calendar for 1894, which is a capital example of the way in which they turn out their work in printing, gelatinating, mounting, eyeletting, and brass bordering. Nothing better could be desired as an effective advertisement.

THE principal feature of the card calendar from Herr Friedrich Jasper, Vienna, is a splendid border of marguerites, natural size, which are printed in their natural colour on a solid gold stippled ground. The calendar is arranged in two panels of six months each, with the name of the publisher in the panel between the two halves, and enclosed in a plain broad gold border printed in bronze-blue over gold, between narrow lines in deep chocolate colour. A similar border, but narrower, encloses the whole design, and with the wide margin and well harmonised contrasts of colour and tints, make it one of the handsomest—if not the handsomest—calendars we have received this year. Needless to say, the execution is as near perfection as possible.

MR. T. H. CRUMBIE has, on account of increasing business, been compelled to remove from Highcross-street, to more commodious premises in Silver-street, Leicester. The folding card in which he makes the announcement is a very tasteful combination of letter-press and lithographic work. The colour scheme—brown and gold, and blue tints, on delicately-tinted card, is decidedly attractive, and, combined with excellent execution, should go a long way to still further increase his business.

MESSRS. GRIENER & PFEIFFER, Stuttgart, send two card calendars, both being very attractive chromo-zincographed designs. That for their own business gives a view of their works, with the arms of the city and the arms of the craft very tastefully arranged. The second calendar is for the well-known firm of Thomä, who appear to be the Whiteleys of Stuttgart. In both calendars the weekly leaflets give plenty of space for memoranda.

A BUSINESS CARD from Mr. H. E. Grantham, Headingley, Leeds, is neatly designed and carefully drawn, but is somewhat out of register in printing, which detracts from its otherwise tasteful appearance.

PAGE OF SUGGESTIONS NO 4



DE MONTFORT PRESS LITHO.

Printed on GROSVENOR, CHATER & CO'S Celebrated Fine Art
"Acme" Printing Paper.



BY CHARLES HARRAP.

CHAPTER XIV.

TRANSFER PAPER RECIPES.

CHAPTER XII. the general principles and requirements of transfer papers are discussed, regardless of the number or variety of transfer papers which may be made by manufacturers, or by individual printers in the majority of printing establishments, each for its own particular purpose. In chapter XIII. the materials used in transfer paper compositions are fully described, and from a very close examination of these details, it may be seen that, however many varieties of transfer paper may have been made in the past, yet, in all probability, the number could very well be reduced, and one good transfer paper be made to suit a number of different purposes, for which at present a separate kind is made for each.

In the first place, the following recipe can be used advantageously for (1) larger and heavier drawings (not being litho writings) upon transfer paper; (2) stone to stone transfers, either warm or cold; (3) plate transfers; and (4) for receiving a grain for use as a chalk paper.

T.P. Recipe I.—

(a) Parchment chippings, or	}	1-oz.
(b) Gelatine, or		
(c) Isinglass		
Common glue	...	1-oz.
Seconds flour	...	2-oz.
Plaster of Paris	...	4-oz.

In the preparation, the parchment (or gelatine or isinglass, whichever may be used) is soaked in cold water for twelve hours, then the earthenware vessel containing it is placed in an iron pan, partly filled with water. The iron pan is placed over heat (a gas stove for preference) until the parchment is reduced to a solution. When reduced to a solution and well stirred up, a small quantity must be taken out and placed in a cool vessel, where it should cool into an elastic jelly, like painters' size. If it cools too stiff, then a little hot water should be added to the parchment in the vessel. If it does not cool stiffly enough, then the parchment must be kept over the heat until the water is somewhat reduced by evaporation. The parchment size must be kept warm until the other constituents are all ready. The common glue must be broken up, covered with cold water, and allowed

to soak for a few hours. Carpenters consider that the glue should soak eight to twelve hours, but that is really much too long. The glue is sufficiently soaked after one to two hours' immersion to become rapidly reduced to solution by the same means as the parchment already described. When both the glue and parchment are in solution, they may be stirred together and mixed, keeping the mixture warm. The plaster of Paris must be mixed with water, as already described in chapter XIII., so that it does not set. The four ounces of plaster will require $1\frac{1}{4}$ to $1\frac{1}{2}$ pints of water, which must be vigorously stirred in little by little, until it becomes a creamy liquid, incapable of setting solid. This liquid can be left standing until the flour solution is ready, when it must be again vigorously stirred. Finally, the flour, which must be of the seconds quality, as that quality is more glutinous than the so-called first quality, is worked up into a thin cold-water paste without lumps in it. To this add a little more water, so that when boiled it will not thicken to a stiff paste, but remain as a thick starch solution. When the paste has been boiled for five minutes, so as to burst the starch granules, it must be stirred well into the plaster solution. After which, the warm mixture of parchment (or gelatine or isinglass) and glue must be stirred into the paste and plaster solution. When well mixed the whole must be strained through muslin, and whilst warm coated evenly, either by a broad soft brush or by a sponge, upon a 25-lb. demy paper. For ordinary purposes, when dry, a second coating should be put upon the paper; but if it is intended to attempt to use the same composition for litho writers' transfer paper, then one good coating should be sufficient upon a much lighter paper. After the composition is dry, the paper must be calendered between hot plates, or grained upon a grained stone or specially granulated copper or steel plates or rollers.

In discussing the qualities of such a paper for the purposes named, it will be admitted by the practical maker and user of transfer papers that it contains all the elements necessary to successful use.

The parchment gives to the paper that hardness and fineness of surface necessary for either writing or drawing upon, whilst the presence of common glue gives it a certain amount of hardness, but makes it available for use upon wet cold stone. The flour (or really starch) adds a soft gelatinous material to assist in binding the thickening body, and in making the paper fit for use upon cold stone, or upon copper plate. The plaster, after going through a fine sieve, is fine enough for all purposes, whilst its quantity gives a body to the paper, when coated twice or three times, sufficiently thick to take a good grain for chalked work. If at any time it should be desirable to use the paper upon a warm stone, then the parchment in its composition will meet that requirement.

In order that the making and uses of other transfer papers may be the more readily understood, this particular paper has been thus dwelt upon, to avoid repeating somewhat similar remarks in other recipes.

Next to the recipe just described, the following is one which gives exceptionally good results for warm or cold stone transferring and for copperplate transfers.

T.P. Recipe II.—

Plaster of Paris	8-oz.
Seconds flour	8-oz.
Isinglass	½-oz.

The preparation of these materials has already been described fully. The coating is effected in the same way; and, as previously expressed, it should be well calendered. The presence of isinglass assists in binding the material sufficiently to allow of the use of the paper for some of the heavier drawing purposes.

A slight deviation from this recipe is the following:—

T.P. Recipe III.—

Plaster of Paris	8-oz.
Starch	8-oz.
Isinglass	½-oz.

The starch is prepared as for laundry purposes, by mixing it into a cold paste with cold water, to which is added hot water until it thickens. It is then stirred well into the plaster liquid. This paper is suitable for warm and cold stone and copperplate. But the amount of starch requires considerable care in using, lest it should run watery.

Another variety of the same recipe is:—

T.P. Recipe IV.—

Plaster of Paris	8-oz.
Seconds flour	8-oz.
Starch	2-oz.
Isinglass	½-oz.

Another comparatively simple variety of T.P. Recipe No. 1 is:—

T.P. Recipe V.—

Parchment	1-oz.
(a) Isinglass, or }	1-oz.
(b) Common glue }	
Gelatine	1-oz.
Flake white	4-oz.

This composition is suitable for warm and cold stone and copperplate transfers. But its general qualities, arising from the presence of so much hard gelatine, tend more to make it a warm stone paper, copperplate paper, and good enough for litho writings and drawings. In making it, the glue should be used in preference to isinglass. The flake white is readily made into a thin paste in cold water, the other materials being made warm, mixed together, and finally added to the flake white paste. This composition should be coated upon the paper whilst warm.

Diverging from these more or less simple recipes, which have been placed in their order of usefulness, it is advisable to look at other recipes designed to meet the same requirements, by a greater complication of ingredients.

T.P. Recipe VI.—

Starch gloss	8-oz.
Gelatine	3-oz.
Gum tragacanth	1-oz.
Alum	1-oz.
Gamboge (colouring matter)	½-oz.

The starch fits this paper for cold stone, assisted by the gum. The latter also assists the gelatine in making this paper suitable for warm stone. There is an absence of any special thickening material, but this is not a barrier to its use for copperplate transfers if the paper is well coated and a sufficiently thin paper used. The only use which the alum has, seems to be to harden the other ingredients. But alum is always liable to dissolve greasy inks and cause them to run. This transfer paper, therefore, may be considered

very sensitive, and the work needs only to be printed on it with very thin ink. The chemical characteristics of alum were fully dealt with in vol. I., No. 3, page 12. In the same way the following recipe is compounded:—

T.P. Recipe VII.—

Starch	1-oz.
Glue	1-oz.
Gum tragacanth	½-oz.
Flake white	1-oz.
French chalk	4-oz.
Gamboge (colouring matter)	½-oz.

The same remarks apply to this recipe as to T.P. recipe VI.; but the absence of gelatine makes this paper more suitable for cold than warm stone. The use of French chalk is unnecessary, since flake white would serve the purposes equally well. This exemplifies how practice has introduced materials simply as a fad of some individual who probably did not weigh the pros and cons of this departure.

The foregoing papers are all, more or less, capable of general usage, and, after a little experience, the practical lithographer will be able to select one of them which suits all requirements. But as there are still many in the business who have particular faith in separate transfer papers for each purpose, a few leading recipes will be given to meet their views.

WARM STONE TRANSFER PAPER.

Up to comparatively recent times, many lithographers considered that transfers could only be put down to warm stone. Such an impression arose, in all probability, from the common practice of making all draughtsman's transfer paper from parchment clippings and other hard gelatines. It was not until the principles of making transfer paper compositions began to be more thoroughly understood that the old practice lost ground. It has given place to an opinion and practice which is the very reverse, and many printers seldom use a warm stone for transferring to.

Still, many of the finest lithographic writings are done upon thin transfer paper coated with a thin parchment size. The nature of the writing operation requires both the thin paper and the thin, hard parchment composition. It is quite true that many writers have overcome the difficulties, and can write upon thicker paper with a different variety of composition. In fact, it seems very probable that a recipe similar to T.P. recipe I. could be advantageously used by them, thus doing away with any necessity for warm stone. Another point to consider is the fineness of lithographic writing, and the very small quantity of ink upon the writing. Under such circumstances the warmth of the stone materially assists in transferring all the greasy lines from the paper to the stone.

Warm Stone T.P. Recipe VIII.—

Parchment clippings.

Flake white.

Make a solution of parchment clippings, which will set in a jelly as already described. This size can be used alone, or a smaller or larger quantity of flake white can be added. According to taste, colouring matter may be added—either pale pink or yellow. If gamboge be used for colouring, the gamboge itself constitutes a cold water gum, assisting in the adhesion of the paper to the stone in transferring. Paper made with this size must be coated twice, and well calendered.

Although this recipe is written with parchment, it is not absolutely the only material which may be used for it. Gelatine, isinglass, or best glue are equally available and give the same results; while chalk or old plaster of Paris may be substituted for the flake white. The flake white, however, grinds so finely as to be preferred.

Warm Stone T.P. Recipe IX.—

Flake white	... ... ...	4-oz.
Izinglass	... ... ...	1-oz.

The flake white is ground into a paste in cold water. Izinglass is covered with water, allowed to soak, and finally reduced to a solution over heat; the total amount of water used for the isinglass being $\frac{3}{4}$ -pint. The mixture must be well stirred and strained, and coated warm upon the paper. This recipe is practically the same as T.P. recipe VIII.

The compositions for warm stone paper may be coated upon thin strong paper, such as bank post, for lithographic writings; upon a good printing paper of 25-lb. demy for small drawings up to royal size; and upon cartridge paper, or machine made water-colour paper, for very large work. In the latter instances, the paper must be well coated and well calendered to obtain a fine even surface.

COLD STONE TRANSFER PAPER.

The necessity for cold stone transfer paper has become so great that it is more economical to have a large supply of such paper always available in the transferring room of all printing establishments.

Cold Stone T.P. Recipe X.—

Best pale glue	... ... ...	1-oz.
Starch	... ... ...	4-oz.
Flake white	... ... ...	2-oz.

The method of making this composition is the same as already described. A small quantity of gum tragacanth will improve its adhesiveness; or the same effect may be obtained by adding a little gum arabic or gum substitute. Not more than $\frac{1}{4}$ -oz. of either to above proportions.

The importance of good cold stone transfer paper cannot be too highly estimated. Such large quantities of plans and other mechanical works are drawn upon it, and letterpress transfers patched upon it, that it has become the only means by which scale drawings can be transferred with any degree of certainty. Similarly, all large or small sheets of the finest chromo work, requiring absolute register, must be transferred upon cold stones. The object in using cold stone transfer paper is to avoid any moisture getting into the transfer paper before it adheres to the stone, and thus the adhesiveness of the paper is the first consideration. In the act of putting the transfer paper upon the stone, the slight amount of moisture upon the surface of the stone must be sufficient to excite the adhesive materials and immediately cause the composition to adhere exactly where it is placed.

It may be argued that the grease of the ink cannot get through the moisture on the stone. But that is not so, as the water retreats from the grease and is immediately absorbed by the composition. The operation is done—or should be done—so quickly, that any inclination of the paper to blister by absorption is counteracted by the adhesiveness and the absorptive

power of the composition. Were it not for the use of this class of composition, it would be next to impossible to transfer sheet after sheet of colour stones of the numerous small prints which are so successfully done by the leading firms of this kingdom, as well as by Continental firms. Germany does not stand alone in this class of work. It is only because Germany has made a speciality of small work, and has become so well known, that that country executes such a large proportion of the small chromo work. Their work, however, is mainly of the pictorial or floral class, and does not interfere with the great mass of commercial chromo-lithography which is done by the same process elsewhere.

The class or weight of paper upon which this composition is coated all depends upon the purpose in view. It may be put upon a light printing paper, about 18-lb. or 20-lb. demy, for ordinary stone to stone work. Or it may be coated upon varnished paper, or other thin transparent papers, for the shining up of large sheets of "colour stones" for either small or large chromo-lithographs. The paper should in every case be well calendered, to secure a perfectly even surface. The composition is too readily soluble to allow any drawing to be done upon it.

In using transfer paper to pull transfers upon, it is customary to damp it slightly before pulling the transfer on it. If that be done, then it should be used at once, before the moisture dries out and causes the paper to shrink. The damping arose from the use of transfer paper which had not been calendered. The damping softened the paper so that it could be forced down level upon the stone to take a perfect impression. To avoid this cause of difficulty, all transfer paper must be calendered and can be used dry.

Letterpress transfers have usually been taken upon this uncalendered paper. The damping has so softened the paper, that in pulling the letterpress transfer the type has sunk into the paper, and caused all the ink on the edges of the type to be printed on the transfer. Type transfers, therefore, were always half as thick again as necessary. The use of a well-calendered paper has entirely altered this state of affairs. By using such flat paper, and by surrounding the chase with "furniture" or other support, type high, the transfers from the type can be taken as clean and sharp as stone or copperplate transfers.

The desire to use transfer paper slightly damped for pulling transfers upon, and to expedite transferring to a cold dry stone instead of a wet one, has caused the introduction of a transfer paper which is always partially damp. The recipe for this paper is not by any means commonly known. Various papers of such a nature are used, and one of them, which gives good results, consists in adding to :—

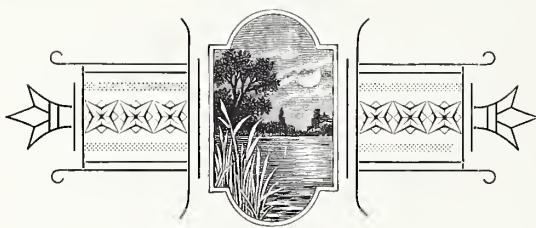
1 bucketful of cold stone transfer paper composition
1 pint of glycerine.

Other printers have brought the matter down to a more exact basis, and make the composition of the transfer paper by mixing it of :—

Izinglass,
Sal ammoniac,
Glycerine,

either with or without a thickening material.

[To be continued.]



Etching, + Drypoint, + Mezzotint.

BY HUGH PATON,

Associate of the Royal Society of Painter-Etchers.

—PART II.—

THE MORDANT.

PRACTICALLY, there are only two mordants with which the etcher need concern himself, the Dutch—so called, I believe, because largely used by the old Dutch etchers—and the nitric. The Dutch mordant is composed as follows :

Hydrochloric acid (pure) ...	10 parts, by weight.
Chlorate of potash ...	2 "
Water ...	88 "

First dissolve the potash thoroughly in the water, which may be heated to facilitate the operation, and then add the acid when cold. The nitric mordant is composed simply of nitrous acid and water, or the ordinary "commercial" quality of nitric acid, which owes its yellowness to the nitrous acid used in its manufacture. Mix the acid with water in the proportion of two parts acid to three of water. The proportion of acid may be slightly increased in cold weather. It is generally recommended to use it in equal quantity with the water, but I have found that proportion rather strong in practice. Formerly, I always used the "pure commercial" quality of nitric (sp. gr. 1.420), with the idea of getting uniformity as far as possible in the biting. But the activity of the acid is so seriously affected by slight differences of temperature, that it is wise to put all such ideas aside and depend entirely upon the "tell-tale" to guide you. Since using this I have found the nitrous preferable, as it seems to attack the copper somewhat more regularly than the pure nitric. The "tell-tale" enables you to get the acid in right working order without the necessity of studying so variable a quantity as temperature.

Both the mordants will be found to act more freely and evenly if there be a little copper already in them, so when starting with fresh acid hang a bit of copper wire in the bottle for a few minutes, until it turns the acid slightly blue. When used too long on the plate, the acid becomes overcharged with copper and ceases to work satisfactorily, hence a portion of the old mixture should be thrown away and new added from time to time as required. When it becomes a strong green it is getting overcharged. If kept at a light blue it is in good working order. The mordant is better mixed some hours before using, otherwise it is raw and uneven in its work.

The fumes from the Dutch bath are slight, and not injurious, but those from the nitric bath, when strong, are bad for the throat, and, especially when working indoors, a little care should be exercised not to stoop too closely over it, and to work in a well-ventilated room. No real inconvenience will be experienced, however, when working on small plates, and a little ordinary care is all that is necessary.

Perchloride of iron is a steady, regular mordant which is sometimes recommended. Mr. Hamerton recommends it for the purposes of aquatint, especially for applying to the plate with a brush; but it has the disadvantage for general use of being more or less opaque, and the work cannot be seen well as the biting proceeds. This is rather a serious objection. Inasmuch as, in the Dutch and nitric mordants, the etcher has all that he requires, the beginner need not concern himself with more than these. I use the word "nitric" here in the larger sense, including nitrous, the two acids being nearly related to one another.

It is essential that the etcher should be able to make the acid do on the copper just what he wishes, and a thorough understanding of the peculiarities of each of the two mordants is necessary. It is largely a matter of individual idiosyncrasy as to which the etcher will prefer for general use, but the other may be useful on occasion.

THE DUTCH MORDANT.

This takes about six hours to bite the strongest lines on an ordinary plate in an average temperature. It can be used with a stronger proportion of acid, or when working indoors the bath can be heated, so as to perform the work more quickly. For the plates in "Etching and Etchers," Mr. Hamerton heated his bath of Dutch mordant always to 90° Fahr., and the strongest lines were bitten in from fifty to seventy minutes, according to the subject and the strength of line required. On the other hand, Mr. Seymour Haden, who worked direct from nature, invented the method of working *in the bath*, using this mordant, and the six hours or so required enabled him to execute the plate in two or three sittings, beginning with the strongest work and proceeding gradually to the finest. In this way he obtained perfect gradation of value. For those who wish to work in this manner the Dutch mordant is the best, but the method, I think, recommends itself to few. A special tripod or table has to be provided, on which to set the drawing board. It must be perfectly level, and strong enough to bear some of the weight of the body. Few can work comfortably, if at all, without leaning more or less upon the drawing board, and for this reason I do not recommend this method of work to the beginner. The board for this process is of the kind formerly described, but stouter. It should be, say, an inch and a half thick, with the well an inch deep, the latter being protected with five or six coats of Japan varnish. The plate can be fixed to the bottom of the well with sealing wax. The hand-rest must be used, and care taken that the coat sleeve be kept out of the acid! Keep a needle for the purpose; the action of the acid keeps it sharp. The ground known as Bosse's, to which I shall refer presently, is used with

MONOTYPE.



this bath. Being soft, it allows the line to widen with the length of biting, and the whole work is executed with one point.

The Dutch mordant darkens the copper which is exposed to its action, and this is an important point in view of the fact that the ground is in itself transparent, and without being smoked does not contrast with the copper colour so as to allow the drawing to be distinctly seen. The line disappears almost entirely in a few seconds by turning nearly as black as the smoked ground, and this is a very serious inconvenience. It is almost impossible to see the work, unless in an exceptionally good light, and even then the strain on the eyes is uncomfortable, not to say injurious.

THE NITRIC MORDANT.

The nitric mordant, on the other hand, does in half an hour the work which the Dutch requires six hours to do in an ordinary temperature. This is in many ways a very great advantage, combined with the equally important one that the line remains bright, and can be distinctly seen at any stage. Still another point is that the nitric causes ebullition in a form that can be seen. The acid bubbles all along the line, and with a little experience one can judge very nearly how the work progresses. This helps to obviate the one great difficulty in etching, that of knowing when the work is sufficiently done. If the bubbling be of a light grey colour, and very gentle—not to say slow—in action, the acid is rather weak. On the other hand, if it bubble violently, and turn to a deep blue, and soon to a strong green, it is too strong. The bubbling should be brisk without violence, and of a moderately light blue colour. This will be found the best working rule for general practice. When testing the acid with the "tell-tale" before pouring it on the plate, the strip of copper should be frosted with light grey in five or six seconds, give off light blue bubbles in ten or twelve, and be biting briskly in fifteen to twenty. This is as near a rule of thumb as can be given.

With this acid the work can be done leisurely, as described in former chapters, and the plate submitted to short bitings as required from stage to stage. Needless to say, the Dutch mordant cannot be poured upon the plate for a short biting without the need of putting it in a bath, as the nitric can. The quantity would not be sufficient for a biting of an hour or more at a time, as is often necessary; the acid would become overcharged with copper and cease to work, and, as there is no ebullition, there is no means of knowing when this is the case. On the other hand, I have never found this to be the case with the nitric. There is always sufficient activity in the small quantity that will lie on the surface of the plate to complete a biting, and I have not used a bath in the orthodox way for many years. But with the Dutch mordant it would always be necessary, as also the attendant trouble of painting the back of the plate with stopping-out varnish.

THE POSITIVE PROCESS.

The two mordants differently affect the colour of the copper. Under the nitric acid the line remains bright, and the plate can be carried through to the finish without any inconvenience whatever. On the other

hand, under the Dutch mordant the line disappears almost entirely, by turning nearly as black as the ground itself. The object of smoking the ground is to enable the etcher to see plainly what he is doing. It might be thought perhaps that the darkening of the line under the Dutch mordant would enable it to be seen clearly if the ground were left unsmoked; and so it would, but this arrangement, while allowing the line that has been bitten to show distinctly enough, makes no provision for the work with the needle being seen distinctly, and the latter is of more importance.

To remedy this, Mr. Hamerton has invented a method of working which he calls "the positive process," with justice, because the work when bitten shows black upon a white ground. It is claimed, too, that the line shows black *immediately* it is drawn. And it may be so when working in a Dutch bath heated up to 90° F., but in ordinary practice in the cold bath there is a perceptible lapse of time before the darkening takes place. Indeed, I found it so when working in the warm bath, but I do not remember its temperature. In any case, the delay I found very tedious.

Mr. Hamerton's method is as follows:—He first prepares the plate with silver cream (*crème d'argent*, or cyanide of silver). I have used Goddard's silvering solution, which is obtainable from any chemist. This is apparently the same thing, when mixed with ordinary plate powder to the consistency of cream. After the plate is thoroughly cleaned, the cream is applied with a camel-hair brush, and, when surface dry, rubbed gently with a clean rag. The plate is then found coated with silver. Next, ground it with a simple saturated solution of white wax in ether, which is to be applied in the same way as the ordinary liquid ground, by simply pouring on and pouring off, so as to leave a thin even film all over. A very little wax is required to make the solution (a bit the size of a marble is quite enough for four ounces of the ether), and the solution is made by dissolving the wax in the ether and leaving it to settle for a few days. Throw away the white sediment; the clear solution is what is required, and is pure wax. Allow this ground to dry for three days, and then ground a second time. After the plate has dried again for three or four days it is ready for use, the ground being now a dead white.

This process has the great advantage that the line darkens quickly under the action of the Dutch mordant, and the work is seen approximately as it will appear in the proof, not merely in black lines upon a white ground, but in lines that show somewhat of the same strength as they will print. For working at leisure in the studio, or for special occasions, this method may be serviceable. For my own part, however, I am inclined to think that the disadvantages far outweigh this one advantage. The process has the objections already stated against the method of working in the bath, and in addition the grounding is tedious, and the ground so soft as to be injured by the slightest touch. As a matter of fact, the desirability of seeing the work in black upon a white ground is more imaginary than real. It will be found in practice

that the negative appearance of the drawing in copper colour against a black ground presents no real difficulty. What is vital is that the drawing, both before and after biting, should be distinctly seen. The continual necessity of guarding against contact with the acid, while the mind is intent upon the work with the needle, is an objection that overrides all the advantages, especially for outdoor work. In the studio, where the board can be placed upon a firm table, and the work done under comfortable conditions, and where the plate can be placed in the bath for the various bitings without the necessity of stooping over the bath all the time, the objections are not so serious, and the method may be tried with advantage.

Mr. Herkomer is also the inventor of a positive process, which is as follows:—He first grounds the plate with ordinary etching ground, but leaves it unsmoked. Then he gives it a coat of white grease paint, of the kind used by the theatrical artist for making-up the face of a player. A stick costs a shilling, and can be obtained generally at a barber's in the neighbourhood of any theatre. Mr. Herkomer heats the stick slightly and dabs the paint on to the plate with his finger lightly, so as not to injure the ground. Over this he dusts the finest zinc white in powder, the result being a perfectly white surface. This process is similar to that of Mr. Hamerton's. The surface is perhaps whiter, though it loses its whiteness as soon as it is placed in the acid, and turns to cream colour. The ground also is very thick, and clings unpleasantly to the point of the needle. Otherwise it has the same advantages and disadvantages as Mr. Hamerton's process.

EFFECT ON THE LINE.

The Dutch mordant works quietly without ebullition, and the progress of the biting can only be gauged approximately by time. (I am speaking here of working with an ordinary ground. The positive ground does allow of one being able to judge fairly well of the progress made.) The ebullition of the nitric, on the other hand, enables the rate of biting to be gauged very nearly by the rapidity of the bubbling, apart from the question of temperature, inasmuch as one weakens or strengthens the acid to the right working point. But the ebullition has another important bearing upon the line as to its width. The Dutch mordant bites downwards and afterwards sideways, the result being a line somewhat like a half circle in section when slightly bitten, and like an inverted Moorish arch when carried further. Beyond that point the ground gives way as it becomes undermined, the arch form being maintained. On the other hand, the ebullition of the nitric tends to wear away the ground, and the result is a line which is wider and more open in proportion to its depth. This on the whole is not an objection, however; rather the contrary, as it keeps the width and depth of the line in better relation to one another. Sometimes the Dutch bitten line does not quite retain its value. Mr. Hamerton relates an instance in which two distinct times of biting—viz., twenty and thirty minutes respectively—printed exactly the same, but on reducing the whole surface slightly with charcoal he arrived at

the desired difference of value. This was probably due to the fact that one line had been bitten to the half-circle stage and the other one to that of the arch. On reducing both a little, the former became rather less than the half circle, and the latter was reduced to it, the opening of the former being slightly reduced and that of the latter slightly increased. The nitric acid never plays this trick, for the reason given above. In printing, the paper not merely takes the ink from the surface of the line, but it is more or less forced into it. In the case of the Dutch line it cannot always get to the bottom because of its shape. In the case of the nitric line it always does, because it is more open, and the paper can withdraw all the ink.

The one objection to the nitric acid that is in any degree serious is that it attacks the copper somewhat unequally. The Dutch mordant attacks all the lines bared on the plate with the strictest impartiality. But the nitric, for reasons best known to itself, acts upon wholesale principles, and first attacks those parts where most copper is laid bare, leaving the isolated lines for after consideration; or rather, it would be more nearly correct to say that the action of the acid is more rapid where much copper is exposed to it, and slower where less is exposed. This, however, is not so serious an objection as it appears to be, since the acid can be applied longer to such of the work as requires it. It will be found in practical experience that a knowledge of the defect is all that is necessary to counteract it. It is, indeed, sometimes an advantage rather than otherwise. This must, however, be carefully attended to, or the result is undue strength in the crowded parts of the work, and weakness in the more open parts.

ARTISTIC VALUE OF THE LINE.

Before passing from the question of the acid to be used, it may be desirable to point out a difference in the artistic value of the line bitten by the two mordants, although the difference is such as requires some experience to detect and appreciate. The Dutch line, being excavated quietly, is characterised when examined under a magnifier, by smooth, straight edges; it prints cleanly and smoothly. The nitric line, on the other hand, is open and rugged, owing to the ebullition; it prints with a rougher and richer quality than the other. The etcher will prefer the one or the other according to his individual bent towards the proper and classical on the one hand, or the artistic (shall I say Bohemian?) on the other. The engraver will prefer the Dutch line; the painter-etcher the nitric. It is right, perhaps, to add that these qualities of the two lines could be corrected if desired, to some extent at least. The Dutch line could be made to print richer by the use of an extra soft ground (perhaps it does so in Mr. Hamerton's Positive Process), and the nitric cleaner and more proper by increasing the hardening and clinging qualities in the ground, so that the ebullition would affect it to a less degree. Thus the etcher can reconcile his taste, if need be, with the acid that suits him best. All this, however, is a rather fine distinction which will appeal only to those who have had considerable experience, and it may safely be left by the learner for after consideration.

When adding work to a plate that has been already bitten, the etcher must be on his guard against the danger of over-biting. It is always rather a difficult thing to bite added work to just the right degree of strength, so that it may harmonise with what is already on the plate. There is especially a great temptation, when the amount of added work is small, to hasten the biting and get it done with. This tendency must be resisted, or the result will be a spoiled plate. A line that is bitten quietly in half an hour, compared with another that is bitten rapidly in half the time with stronger acid, though to the same strength, is different in character and inharmonious with the other in the proof. To hasten the biting with the nitric mordant is to make the line more ragged. The quietly-bitten nitric line, though rough compared with the Dutch line, is clean and smooth enough for all ordinary purposes, but the hastily-bitten line is not merely ragged, it is harsh, and destructive of all quality. Never allow yourself to be hurried in biting the finishing touches to the work on a plate.

I may just add here that, for the purpose of the reproductive etcher, the Dutch will often be found the more suitable, as it is easier to gauge exactly an hour's biting, say, with the slow mordant, than to rightly estimate the value of a five-minutes' biting with the nitric. The greater length of time over which the biting of a given value extends reduces the tendency to error, and for the purposes of reproduction, when it may be important to get a certain tone just right, the slower bath may be the better. Speaking, however, from the point of view of the painter-etcher, I certainly prefer the nitric line; it is more artistic.

To be continued.



Interesting to Engravers.

HE second exhibition of the French Society of Artist-Engravers was opened on January 31st last by the President of the French Republic. In the series of short speeches seemingly inseparable from an occasion of this character, special claim was made for engraving to be classed as an essentially French art, with which sentiment M. Carnot warmly agreed, remarking that he attended not only in an official capacity, but as a patriot.

Installed in the large salon of the Cercle de la Librairie, the exhibition includes some one hundred and twenty plates and work produced from them by the artist's burin, but the seemingly small quantity is more than compensated for by the excellence of the whole of the exhibits.

Having no intention of individually selecting subjects for notice—which would be invidious amongst such a galaxy of productions—in this connection it has been well observed that if, in the arts of reproduction, wood engraving represents the democratic element, then the engraver's burin may be perhaps taken as the insignia of the artistic side of the engraving profession. As a matter of fact, the first penetrates everything and throughout all classes, owing this

popularity to the innumerable books and journals in which it is used for purposes of illustration. On the other hand, the work of the burin is much less widely distributed—its somewhat prohibitive price, necessitated by the time taken in obtaining the finished plate, tends to confine it to the hands of collectors and moneyed patrons of artistic tastes.

Probably beyond any other similar process, the use of the burin requires long practice, great facility in drawing, and above all, a wide artistic education—which must combine to assist in a sympathetic interpretation of the subject. As was said of the previous exhibition, in 1893, one might possibly become a water colourist in a few weeks, or a wood engraver in some two or three years, but to become a competent exponent of the burin would absolutely entail fifteen to twenty years of hard practice. For this reason the comparatively small number of exhibits is easily accounted for.

The general public is lamentably ignorant of this method of engraving, all processes are alike to it—drypoint, burin, heliogravure even, are all lumped together under the general term of etching. This ignorance is regrettable and confusing, and the Society deserves every success in its endeavours to popularise a knowledge of the beautiful art. But the exhibition has yet another aim, which is to show in these *fin de siècle* times how, under the pretext of scientific discovery, the hand of the artist has become more and more superseded, to the detriment of the value of the work, while at the same time the Republican artists have striven to continue the work and the fame of their many compatriots of three centuries past.

Taken as a whole, the designs executed again demonstrate the artistic and æsthetic education requisite to become a competent exponent of burin engraving, and while the exhibits are remarkably interesting in themselves, their collection by the Society is a new indication of the existence and vitality of an art which critics have classed as amongst past and dying arts, while it also demonstrates that although chemical methods of engraving may in some cases replace the hand of the artist, in others they must perforce give place to the art which in the Republic has attained such a meritorious position, and which surely has even a higher era of artistic perfection and popularity before it.



THE proposed tobacco duty in Germany has had the result of checking orders given generally about this time for lithographic labels. The tobacco industry is very slack in consequence, but hopes to defeat the bill; whether this hope will be justified time will show. The money required has to be found in some way or other.



THE Buda-Pesth Graphic Club is organising an exhibition of the world's graphic journals, for the purpose of shewing the status of the graphic art in journalism. The exhibition is to be open from March 15th to 24th.



The United States National Lithographers' Association.



THE sixth annual convention of the National Lithographers' Association was held at New York, on the 11th and 12th of January. Since the organisation of this influential body there has never been a time when more serious conditions presented themselves for consideration by an industrial convention.

THE COPYRIGHT QUESTION.

The subject of international copyright, one of the most important questions which have arisen for a long time, was dealt with in a generous, broad, and vigorous spirit, which cannot but have its good effects upon the trade at large. The decision, which will be anxiously looked for, is confidently expected to settle for all time the mooted question of permissibility in reproducing a foreign photograph, which is made abroad, sent to America, and then stamped "copyrighted." It will be a boon to many firms who now hesitate to use such material from fear of adverse decision against the American Lithographic Company in the suit pending, a decision which would establish a precedent disastrous to the artistic and the commercial possibilities of lithography in the United States.

FOREIGN COMPETITION.

A prominent speaker on this subject said:—

As a German by birth, I am sorry to say that I never heard complaints about English or French competitors. The Germans alone have the glory and the name of being the most unscrupulous in bringing their goods to our shore, and in cutting our prices in a mean and contemptible way. The means which enable them to do so are many. First of all, the difference in wages paid to their employés, which amounts in the art line to one-third, and in the case of printers and help to one-fourth of the money paid to our American employés.

By this very reason, the market of the whole world is open to them, and enables them to use a drawing (naturally the most costly part) over and over again. What they sold in Germany and England, they sell here again, and the original drawings ordered here they sell to the other part of the world ten times and more. They should be satisfied with this advantage, but they are not; in order to make it still more profitable, they undervalue in their invoices, and *horribile dictu!* the honest man swears to it.

To balance the difference of wages would be hardly possible for us, when duties were paid properly, but when only one-fourth of it is paid it is an impossibility.

I have several times appraised goods sent from Germany to different addresses, and I have not found a single invoice which I could call nearly correct.

The way they pack and ship their goods shows how they have studied the art of misleading the Custom House officers.

You find, for instance, in one box with other goods, 2,000 of a kind, in another box 3,000 of the same kind; the whole edition is scattered over half-a-dozen different boxes, and while they charge for the 2,000 in the one box a little more, the invoices of the others show prices for recorders.

The only remedy for this mean competition is a specific duty, high enough to cover the difference of wages paid in the respective countries. Then we would be able to compete with the whole world, Germany included. And when in course of time the wages of the different countries are on an equal footing, we will gladly go for "free trade" and export to Germany.

THEATRICAL PRINTING.

The committee on theatrical printing reported through Mr. Morgan that of the twenty-four firms in the United States with whom this branch of lithography is a specialty, four only were members of the National Lithographers' Association. An association, known as the Show Printers' Association, was, however, operative in this direction, and the committee deemed it fitting that the work should be left in the hands of that body, which was specifically organised for such purpose.

LITHOGRAPHIC SCHOOLS.

The standing committee on this subject has faithfully performed its duties. Especial credit is due to Mr. Louis Prang for the deep interest he has taken in this matter. Various meetings were held, sometimes in co-operation with Dr. MacAlister, president of the Drexel Institute, of Philadelphia, and the preliminaries had all been settled with him, when, unfortunately for the craft and the country, the great philanthropist, Mr. Drexel, died. The president, Dr. MacAlister, while deplored the delay, further caused by the necessity of adding another storey to the building to give the desired room for the school, has promised that it will be called into existence as soon as practicable, as an appropriation for the purpose had been made. Mr. Prang has had further communication with the Pratt Institute, of Brooklyn, which is considering the proposition for a lithographic school, but must defer action until a later time.

Mr. Wilhelms gave some pertinent information relative to the feeling of those in authority over the Pratt Institute as to a school for lithography in that institution. He said that he had called upon Mr. Pratt, who had given him an encouraging assurance of good will, and stated his willingness to establish such a department provided he could be shown that it might prove for the benefit of the community at large. Mr. Wilhelms suggested that the proper committee wait on Mr. Pratt, and enter into particulars for his benefit. He further stated that there were rumours of establishing a school in Rochester, and recommended that the committee be enlarged to include additional members to whom it would be convenient to confer with the authorities of the Pratt Institute. G. H. Buek and Charles T. Wilhelms were then appointed as additional members of the committee on schools, to visit the Pratt Institute.

THE Lithographers' Association of Philadelphia is flourishing and doing good work; eighteen out of twenty-three firms in that city are members of the same, with two honorary members, General Louis Wagner and Mr. Max Rosenthal. They hold their meetings regularly every quarter with good attendance, and report a balance in the treasury of \$423.

THE banquet of the National Lithographers' Association, following as the finale of the convention, was a success in every particular. The committee performed its work in an expeditious and exceptional manner, and wit and humour kept pace with a hearty gastronomic satisfaction. The table was set in the annex of the Gilsey House; an excellent menu was discussed, and there were enough toasts to make every one comfortable.

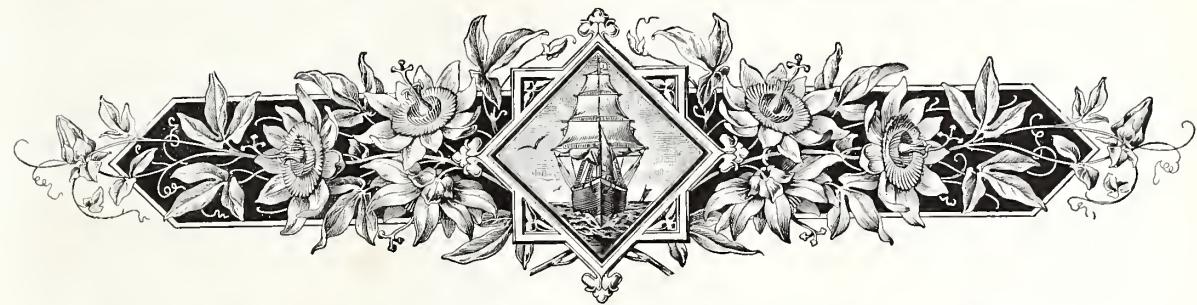


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What is Colour?

CHAPTER XII.

HARMONY OF COLOURS.



In the recent chapters, the subject of colour has been treated from the standpoint of contrasts. That branch of the subject is a most important one, and must be the basis of all practical colouring. From the perfect knowledge of contrasts, can be deducted all the schemes of perfect colouring; and one of the branches of colour sensation which originates in the study of contrasts, is the formation of harmonies of two or more colours. It must not be understood from the use of the word "contrast" that contrasts are as a rule loud, vulgar, or disagreeable. The word "contrast" is used in its strict philosophical meaning, to convey the idea of bringing any and every colour into juxtaposition, so as to judge the effect of one upon the other; or, in other words, to be able to describe the effect of contrast. In thus bringing colours into contrast, it is easy to determine as to the quality of the contrast. The more agreeable contrasts are generally termed harmonies. But the judges of harmony are the experimenters themselves, whose judgment is based upon their own individual powers of colour perception. Their natural ability to judge colour harmonies is greatly influenced by their scientific knowledge of colour sensation. Taking the majority of cases, the results of these experiments are in accord with the ordinary colour perception of the mass of the people, whose power to discriminate is totally due to natural ability, unassisted by scientific training. This natural ability has its origin in the evolution of the human being from the more or less wild state. In nature, the colour of flowers, fruits, butterflies, birds, mammals, etc., etc., can be traced to some requirement. The flowers, with their gaudy colours to attract insects; fruits, to attract birds or mammals; butterflies, to suit their natural habitat or resting-places; birds, to compete in beauty of plumage for natural selection, or, as in mammals, to bring their colour into unison with the surroundings as a means of protection. This is but a brief outline, serving only to shew that the animal and vegetable world have grown and developed together, and that colour

has been a constant source of distinction, and a strong influence upon the whole animal world. There is a vast amount of truth in the saying that "habit is second nature." In the world's progress, the animal eye has become accustomed to all kinds of colouring; and the habit of seeing any particular combination of colour grows into second nature, finally, making the animal eye so well accustomed to it, that it is considered a harmonious blending. As an example of this, may be quoted the curious colouring which the so-called lower classes of people sometimes wear in dress. Instances are not uncommon of ladies wearing light straw hats with sprays of green leaves, red berries, etc., and a blue costume. This list of colours could be considerably enlarged, and still be within the truth. Such a dress, however, is considered loud, vulgar, and in bad taste. Yet if nature be taken as a guide, there are to be found equally vulgar combinations of colour. The sweet pea gives us white, red, violet, and all shades of green. Red and green occur in nature over and over again. The beautiful autumn tints are made up of red and all shades of green, from a deep green to a light one, almost yellow. Crimson and green, orange and green, yellow and green, blue and green, are all nature's efforts at colour combination. With such a mass of apparent contradiction, it is difficult to reconcile the teachings of nature with the teachings of science. Thus, the normal eye gauges harmonies almost equally as well as the highly educated eye. It seems that the change which has taken place in the normal eye, the change which has freed it from its natural inclinations to judge nature's combinations as fairly accurate, is due to civilisation; due to a taming down of natural instincts; due to living in large towns; and due to not gazing upon nature in the light of nature alone, during the greater part of existence, as by our predecessors. The loss of colour perception has been greater in man than in woman. Experiments shew that there are far more men colour blind than women. Are we to deduce from this that the ladies have always had a stronger eye for colour than the sterner sex, since it was probably they who exercised the greater selective power in choosing their male partners, by the outward gaudy appearance of the males?

From such an analysis of how colour becomes a part of human nature, it is clearly shewn that each individual is capable of judging what are harmonies and what are not. There are some contrasts of colour which, by their brilliance and divergence of hue, are disagreeable to look upon. They cause an involuntary throbbing in the optic nerves, equivalent to pain. Such cannot be termed harmonies. A harmony can be any combination of colour which is just clear of the above disagreeable character, and ranging down to the combination of colours which are equally brilliant, whilst they afford a certain amount of repose to the eyesight. Thus, harmonies may be classified as :—

I. HARMONIES OF ANALOGY.

1. Harmony of tone ; being the harmony of different depths or shades of the same colour.
2. Harmony of hue or colour ; being the harmony of equally bright and closely allied colours in the spectrum.
3. Harmony of a dominant light ; being the harmony of various allied contrasting colours, dominated by the strength of one of them.

II. HARMONIES OF CONTRAST.

4. Harmony of contrast of tone ; being the harmony of widest difference of depths of the same colour.
5. Harmony of contrast of hue or colour ; being the harmony of unequal depths of colours closely allied in the spectrum scale.
6. Harmony of wide contrast ; being the harmony of very different colours, being somewhat complementary in contrast.

To make clearer the analysis of harmony, tabulated above, the following are leading examples :—

I. HARMONIES OF ANALOGY.

1. HARMONY OF TONE.

Lemon-yellow and chrome-yellow.
Chrome-yellow and No. 2 chrome.
Ultramarine and cobalt.
Light red and scarlet.

2. HARMONY OF HUE OR COLOUR.

Orange and deep yellow.
Orange and red.
Red and green.
Green and blue-green.

3. HARMONY OF A DOMINANT LIGHT.

Red and green viewed through a red glass.
Greenish-yellow and blue viewed through a yellow glass.
Orange and violet upon a pale orange ground.

II. HARMONIES OF CONTRAST.

4. HARMONY OF CONTRAST OF TONE.

Lemon-yellow and deep chrome.
Pale pink and deep crimson.
Pale blue and prussian blue.

5. HARMONY OF CONTRAST OF HUE OR COLOUR.

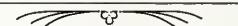
Blue and violet.
Dark green and light blue.
Yellow and red.

6. HARMONY OF WIDE CONTRASTS.

Orange and blue-green.
Greenish-yellow and violet.
Red and blue.

From these preliminary examples of contrasting colours to determine the character of the harmony in each case, it will be well to consider as fully as possible the harmonies or otherwise of a number of colours, brought into juxtaposition with each other, and separately surrounded with white, black, and grey. The conclusions arrived at in contrasting two colours with one another, upon a white ground, serve two purposes. First of all, they shew the effect of contrasting the two colours themselves in the ordinary way upon a white ground, and secondly, they shew the effect of contrasting the two colours in combination with isolated patches or stripes of white.

[To be continued.]



WRITING recently on the question of foreign competition in lithographic printing, Mr. William Day, who claims to be the oldest chromo-lithographer in Europe, asserts that colour printing does not go abroad to be executed because it is done more cheaply there—on the contrary, there is no place where it can be done so cheaply as in the British Isles. Nor does it because of the want of technical education on the part of the artisans ; nor, again, on account of better artistic skill being found for the making of the original water colour or oil pictures from which the chromolithographs are reproduced, for it is an indisputable fact that English artists make many of the beautiful original drawings from which the Germans, French, and Dutch reproduce the charming books, Christmas cards, and toy books which are sold in such immense quantities in England and elsewhere. Colour printing is executed so largely abroad for the English market in the main because the foreign printer is both producer and publisher, and therefore the speculator and capitalist, who manufactures for the world. On the contrary, our colour printers are not publishers, and confine their operations to their own towns and neighbourhoods. From all this, it follows that the English workman is kept out of the work for the want of enterprising capitalists amongst master printers.

MESSRS. PERCY LUND & Co., The Country Press, Bradford, send us a copy of "Burnet's Art Essays," recently published by them, especially directing our attention to the new rough cloth binding, which is much more pleasing and artistic in style than the smooth cloth covers usually adopted. The colour is of a rich warm brown with lettering and ornamentation in black, giving it quite a distinctive appearance, whilst the material itself is most pleasant to the feel and very durable. The regular edition, which was noticed in our last number, is bound in the ordinary way, crimson cloth with gilt lettering.

THE partnership between Mr. Chas. Campbell and Mr. Wm. Marsden, under the style of Campbell, Marsden & Co., designers and engravers, at 93 Fore-street, London, E.C., has been dissolved by mutual consent. The business will in future be carried on under the style of Chas. Campbell & Co., with the same complete staff of high-class workmen. All accounts will be received and paid by the new firm.

The Scotch Litho Patent Decision.

IN an action at the instance of Mr. Thomas Elliot Baird, artistic stationery manufacturer, Kelvinbridge, Glasgow, pursuer, against Messrs. Millar & Lang, artistic stationery manufacturers, Robertson-lane, off Robertson-street, Glasgow, defenders, the pursuer sought to interdict the defenders from manufacturing, selling, disposing of, or using any products made in accordance with letters patent No. 7422 of 1889, as described in the specification filed relative to the letters patent, or from infringing in any manner of way the rights and privileges granted by the letters patent. The defence to the action was that the so-called improvements in and relating to embossing of designs, letters, figures, prints, or patterns, claimed by pursuer in the specification, were not a novelty at the date of the alleged letters patent, were not the invention of the pursuer, and were not capable of being patented by pursuer, and that the alleged letters patent were void and null; further, that the method of embossing described in the specification was public property, and in general use in England and in Scotland before the date of the specification, and the names of a number of well-known firms were particularly specified. After a lengthened proof and debate occupying eight days, Mr. Sheriff Guthrie has issued the following interlocutor in favour of the defenders:—

"Glasgow, 12th February, 1894.—Having heard parties' procurators, finds that the invention or process described in the specification of the pursuer's letters patent (No. 7,422, 1889) No. 7* of process, was not at the date thereof novel and capable of being patented; therefore finds that the said letters patent are void and null, refuses the interdict craved, assoilzie^t the defenders, and ^tdecerns: Finds the pursuer liable to the defenders in expenses (under deduction of the expenses of amendments previously allowed), including a debate fee of £5, and the expenses of preparing to give evidence in the case of the witnesses Harrap and Fairweather;† Allows an account of expenses to be given in, and remits the same when lodged to the auditor to tax and report.

(Sgd.) "W. GUTHRIE.

"NOTE.—At the end of this case, which has been conducted with great industry and ability, I am unable to say that the pursuer's alleged invention is anything but what a very competent and judicious witness, Mr. Harrap, called it, 'a matter of extended skill' (proof p. 199);§ 'an extension of skill shown in the past,' 'an advance to perfection' (pp. 209, 210). The thinness of the pursuer's case became evident in the course of the proof, when he was driven to distinguish between the production of copies of etched and of engraved work in the cylinder lithographic machine. Otherwise it was not possible to avoid the conclusion that a substantially identical process had been practised in Albert & Daniel's at Hanley, and taught|| and practised** at Blacklock's and elsewhere, by†† Mr. Harrap, not to speak of Mr. Lyon's fish papers. In these and other cases the trade was familiar with the use of a matrix†† or force attached to the cylinder by an adhesive gum or otherwise and

licked up from a plate or stone lying on the carriage of the machine, whereby parts of a lithographed picture were raised or embossed. If it be assumed in favour of the pursuer, and one can hardly say that it ought to be, that such embossing had not been done from engraved, but only from etched plates or stones, and only as regards depth and clearness of outline in a very inferior degree, it is still impossible to hold that a patent can be maintained for the application of the process to the impressions made from plates or stones which have been engraved with a graver. It is well settled that there can be no patent for a well-known contrivance merely because it is applied in a manner or to a purpose which is not quite the same, but analogous (Harwood *v.* G. N. Ry. Coy., 11, H. L. Ca. 654, &c., &c.), and here it can hardly even be said that the purpose is not quite the same but analogous. It may be truly said that it is entirely the same, for the cylinder machine is used to produce a certain impression on a picture or piece of paper called embossing, and the difference is not in the manner of producing the impression, but in the way in which the stone or plate has been manipulated, the mode of manipulation (etching and engraving) being both previously well known and commonly practised. It humbly appears to me that it would be superfluous to go more fully into the evidence which has been led. I have read it all with care, and many passages repeatedly, being impressed not only by the great labour and talent which Mr. Oatts bestowed on his case, but also by the admirable work which the pursuer has produced in his endeavours to perfect his system. It is enough to refer to the description of work done long before Mr. Baird's time by Wright, §§ Price, and Daniel (pp. 63, 74, 165, &c.), by Harrap, (p. 197), not to speak of Lyon, Douglas, and others, who have practised embossing of a somewhat less advanced kind.

(Signed) W. GUTHRIE."

Agent for pursuer: Mr. J. Lumsden Oatts, writer, of Messrs. Lindsay, Meldrum & Oatts, West Regent-street. Agent for defenders: Mr. Clement M. Campbell, writer, of Messrs. Gordon, Smith and Parker, 205 Hope-street.

The result of the trial, which has extended over nearly a year, will be received with general satisfaction by the whole lithographic trade; especially as it breaks down a so-called patent. The lesson to be learned is that patents should not be applied for through inexperienced patent agents, but should rather be put into the hands of experts in the branch of trade in which the patent is sought, after the provisional protection has been obtained.

* "No. 7 of process" = The seventh document produced in the trial.
† Assoilzie, in Scotch law = To acquit or absolve by sentence of court. "Decern," in Scotch law = To decree, to give judgment.

|| The patent agent.

§ The reference figures, viz., "(proof p. 199)," "(pp. 63, 74, 165, etc.)" refer to the pages of the books of evidence. All the evidence in this trial was taken down verbatim and afterwards transcribed in typewriting and made up into thick volumes, numbered through as one book.

|| At the Manchester Technical School.

** As proved by evidence and samples by Mr. Harrap.

†† Proved by.

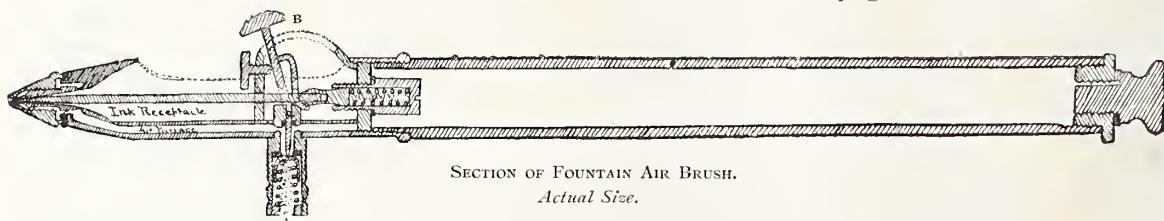
†† "Matrix" or "force" were in this trial singularly confused. The better distinction should have been the "die" and "matrix," or "male and female dies."

§§ By Messrs. Wright and Price, at Messrs. Albert and Daniel's, at Hanley; and corroborated by Mr. Daniel.

A New Air Brush.

STANGE indeed, it seems, that a tool so ingenious and so universally useful as the air brush should be largely used in America, both by painters and photographers, and yet almost unknown in Britain. There are two forms of the tool. One, complicated, but yet of the greatest value to all who wish to apply liquid pigment to a surface, was introduced some ten years ago, is used very largely in the

surrounds the lower part of the ink reservoir at the tip of the "brush." The force of air along this passage draws the ink (or other colour) by suction from the reservoir, and throws it forward in a fine spray. In the section, the opening of the ink reservoir is closed by a pointed rod in the centre of the tool. When such is the position, no colour can be thrown, but the button B can be pulled back by the forefinger, so that it draws the plug rod back and leaves the



SECTION OF FOUNTAIN AIR BRUSH.
Actual Size.

United States, and in a few of the best studios, both photographic and lithographic, in Britain. The other, simple, handy, durable, invented by a practised worker with the older "brush," was placed on the American market a year ago, and will probably shortly be offered in England, the inventor, Mr. Chas. L. Burdick, being in London arranging to dispose of his British patents. He has been giving demonstrations at the *Photogram* office to the press and to artists and others. The photographic and other journals have spoken most highly of the new air brush, and artists and draughtsmen have at once seen its advantages.

The working power is air, compressed by a pump into a reservoir, and thence conveyed by a rubber tube to the "brush." Any pump can be used. The

opening clear. By this means the amount of colour thrown can be very finely regulated.

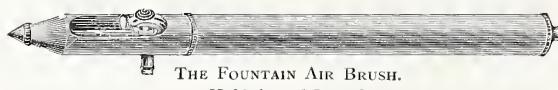
It will be seen that there are practically no wearing parts, and in actual use the only real difficulty seems to be found when careless people leave their ink in the "brush" to get dry and hard.

A drop of water placed in the ink receptacle and blown through will at once clean it out (if not dried hard), and this makes it very

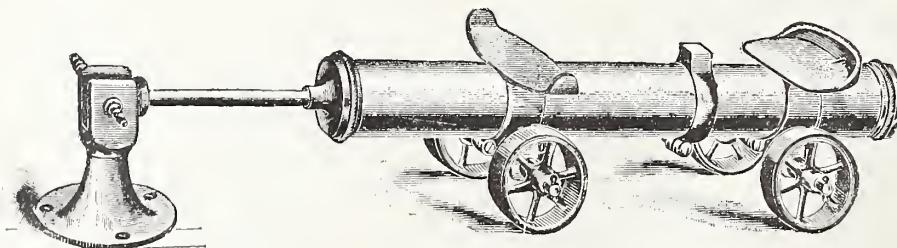
easy to change from one colour to another.

NEW APPLICATIONS.

In America the air brush is very largely used by artists, designers, and draughtsmen of all classes. It is used to work up photographic enlargements, to re-touch large negatives, to paint pictures in oil or



THE FOUNTAIN AIR BRUSH.
Half Actual Length.



ROLLER AIR-PUMP FOR AIR BRUSH.

one invented and recommended by Mr. Burdick consists of a cylinder on a small wheel carriage, working along a hollow piston. A valve admits air into the cylinder as it is drawn backwards, and on the forward stroke the air is driven through the hollow piston (a valve in which prevents its return) into a receiver. A rubber tube takes the compressed air to the inlet A, which will be seen by the section to be closed by a spring valve. Pressure on the button B opens this valve and admits the air to the air passage, which

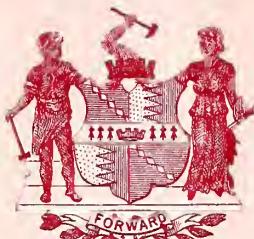
water colour, and is even used direct on to the stone in lithography. With all colours it has been used for china painting for firing.

IN PHOTOGRAVURE AND ZINCOPRINTING.

In photogravure its use is suggested for laying a ground more satisfactorily and certainly than can be done with the clumsy dusting box. On this Mr. Burdick is making a series of experiments. In zincography the air brush seems likely to supply the artist's

The Arms of the Boroughs & Towns of Great Britain.
Containing various points of note for the artist on the ART of BLAZON.

Birmingham. C. B.



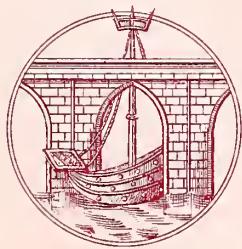
Warwickshire. 429.171.

Brackley. M. B.



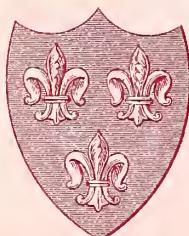
Northamptonshire. 2.591.

Bideford. M. B.



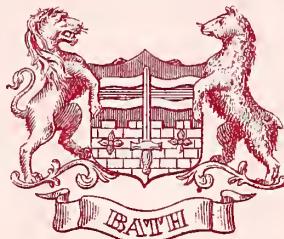
Devonshire. 7.908.

Wakefield. M.B.



Yorkshire. 33.146.

Bath. C. B.



Somersetshire. 51.843.

Bristol. C. B.



Gloucestershire. 221.665.

Walsall. C. B.



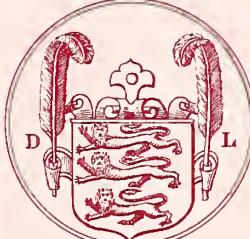
Staffordshire. 71.791.

Leeds. C. B.



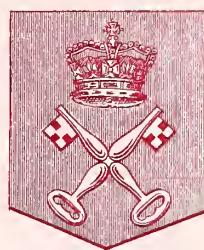
Yorkshire. 367.506.

Blandford. M. B.



Dorsetshire. 3.974.

York. C. B.



Yorkshire. 66.984.

Buckingham. M. B.



Buckinghamshire. 3.364.

Bridport. M. B.



Dorsetshire. 6.611.

desideratum—a method by which his actual handwork can be etched without the intervention of the camera. The throwing of a resist on to zinc, and direct etching, is suggested. The first experiment was made with

interesting lessons. It will be seen that in all, having no experience as a guide, Mr. Burdick made the mistake of throwing too much colour, and thus blocking up the shadows. The globe and the mouth



SECOND ATTEMPT.



FIRST ATTEMPT.



SECOND ATTEMPT.

ordinary lithographers' tusche, which was thrown on to a zinc plate that was afterwards etched with dilute nitric acid. We give the three blocks resulting from this first experiment, not as perfect results, but as

were thrown direct on the zinc, while the eye was thrown through a piece of fine muslin stretched tight over the zinc surface. On etching these the faults were at once apparent, and a second trial was made.



FIRST ATTEMPT.



FIRST ATTEMPT.



SECOND ATTEMPT.

The result of this we also give, not as satisfactory, but as, again, instructive. Other attempts will be made and etched, but will be too late to include in the present issue. In the next attempt we shall probably try a fairly stiff bitumen resist, and it has been suggested that it will be easier to judge the amount of resist necessary if the polish is just taken off the zinc by a dip in the etching bath.—*Photogram.*

ETCHING ON GLASS.—It is now found that in the art of etching photographs on glass, a very satisfactory result may be secured by covering the surface with a solution of gum made sensitive with bichromate of potash, and printing the same under a negative. After the image has in this manner been produced, it is dusted over with minium or red lead, and the red picture which is thus obtained is fixed and burned according to the usual process. The easily soluble red glass which comes from this method is treated with strong sulphuric acid, when a white matt design is produced, the picture appearing by transmitted light as a positive. Some specimens in this line by German artists are described as exhibiting superior merit, as compared with those produced by ordinary means.

MANY of our readers may be interested to learn that in connection with the Guildhall Art Gallery, a loan exhibition of pictures, free to the public, will be held during the months of April, May, and June. A large number of the masterpieces of English and Dutch painters will be exhibited, these having been lent to the Corporation by their owners. The whole exhibition will be well worthy of a visit, and to show the popularity of these exhibitions, nearly a quarter of a million persons visited the last loan exhibition in 1892. The chairman of the Library Museum and Art Gallery Committee of the Corporation entrusted with the management of the exhibition is Mr. J. J. Baddeley, of the well-known firm of Messrs. Baddeley Brothers, Chapel Works, Moor-lane, E.C.



Asphaltum Etching on Stone.

THE old handbooks the process of etching on stone has often been dwelt upon, without the information becoming the universal property of lithography. Results of the same kind as are obtained by etching on copper are unattainable by this process; but still asphaltum etching plays an important rôle in the stone printing of the day.

Having had his attention called to the etching qualities of the stone, J. Mai, Tilsit, undertook several attempts in etching, his results being recorded in *Freie Künste*. He found that in reality there were no difficulties to be overcome. An illustration which he had to make was produced in the following manner:—He took a faultless bluestone (free from chalk spots, veins, or splits), which had been well polished and afterwards gummed, and covered the same, after carefully washing off the dry gum with a shellac which he had prepared for this purpose, and which spread itself over the stone. He then waited until the shellac had thoroughly dried. He then grounded with a soft gum brush and a common stone ground as black as possible, until the layer was thoroughly covered. The grounding process has two purposes. The outlines may be traced with the tracing paper as in any other lithographic work, and at the same time the ground protects the shellac against being touched with the hand. The outlines were made with a lead pencil, which was not too hard, the needle being liable to tear in. After he had produced the outline in red on the black ground, he commenced to work with fine letter-shavers, in which operation he avoided engraving and puncturing the stone, removed the shellac dust with the dusting brush, just as in the engraving process; in this manner much more progress was made than in the usual engraving work, being enabled to give the single lines more character and force, without using a great deal of strength, in the same manner as making a drawing on paper. He drew the straight lines with the pointed needle, the aim being to penetrate with the needle into the stone itself; that is, to remove all the shellac in the stroke. Mistakes which occurred were covered with dissolved Syrian asphaltum. Great care was found requisite to avoid damaging the etching ground and prevent unwelcome defects.

Lettering cannot be done in this manner, and should be engraved afterwards, in the work. As mentioned before, it is better to use the shaver, which, however, is a matter of taste. If the drawing has been executed without faults, it is etched with a mixture of fifteen parts water and one part of chemically pure acetic acid; this mixture is not employed at the longest more than half a minute and is then poured off; the stone is

afterwards cleaned with a plentiful supply of clean water, and all particles of the acid carefully removed. After this, several layers of blotting paper are laid over the surface for a quicker drying, and the operator rubs with the flat hand over them, without using any great pressure. The work is then dried with the fan, and the drawing must appear clean, as if it had been engraved. If there are especially strong parts, the rest is then covered with Syrian asphaltum, is allowed to dry, and the etching process is executed in the manner before described, for at least one minute. This being finished, water is again poured over the stone, which is thoroughly dried and coated with linseed oil. The whole is then washed off with turpentine, the stone is again cleaned with water, blackened in with greasy ink, and then gummed.

Etched subjects transfer very well, as everything has about one depth, and a bad transfer does not easily happen—as is the case with deeply shaved places in the engraving process—for all parts absorb the colour uniformly.

Asphaltum etching may be employed to advantage, as with different layers of lines corresponding to the picture, an effect can be obtained similar to a steel engraving. With regard to the black ground placed over the shellac, Mr. Mai states that, singularly, it did not once dissolve, and, therefore, did not cause any hindrances.

Anyway, the reader is recommended to make an attempt with this process. He will be astonished at the rapidity of production. A little failure should not discourage anyone, and this need not happen if he pays close attention to the work.



At a meeting on February 13th of the photographic trade section of the London Chamber of Commerce, Mr. F. Bishop (Marion & Co.) reported that a circular, suggesting the formation of a photograph copyright union, had been sent to all the photographers of the United Kingdom, and that nearly seven hundred replies had been received expressing willingness to join the union, and to agree to the proposal to impose a minimum charge of 10/- for the right to reproduce a copyright photograph (for one issue only). The majority of the trade are, therefore, in favour of the proposal.



A FIRE on January 24th did considerable damage to the printing ink and varnish works in Meadow-road, Leeds, occupied by Frank Horsell & Co., Limited. The amount of the loss is not known, but arrangements have been made to carry on business as usual until the damage is repaired.



The Merchandise Marks Act.



ACCORDING to the resolution of the Trades' Congress at Belfast, in September last, the representatives of the trades most particularly interested in the correct marking of goods, either made abroad or in this country, met in conference at the offices of the Parliamentary committee of the Trades' Congress, Buckingham-street, Strand, London, on Thursday, December 7th last. The conference took place between the following members of the Parliamentary committee: H. Broadhurst, J.P., J. Mawdsley, J.P., J. M. Jaćk, J.P., D. Holmes, J.P., W. Inskip, J.P., B. Tillett, J. Hodge, C. Fenwick, M.P., secretary, and the representatives of the trades interested, viz.:—Mr. Holmes (Leicester), hosiery trades; Mr. Bower (Nottingham), hosiery trades; Mr. Oscroft (Nottingham), hosiery trades; Councillor Uttley (Sheffield), cutlery trades; Mr. Pye (London), gold beaters; Mr. Stewart (London), gold and silver goods; Mr. Eldridge (London), gold and silver goods; Mr. Schofield (London), lithographic printers; Mr. Watts (London), lithographic printers; Mr. C. Harrap (Manchester), lithographic artists.

The Parliamentary committee assisted the proceedings by bringing forward a draft Bill, somewhat similar to the bill introduced some five years ago by the then prominent labour members of Parliament. Of those labour members there were present at this meeting Messrs. Fenwick and Broadhurst, who were again able to assist the conference in coming to a satisfactory conclusion. The deputation were not prepared to accept the draft Bill as one which met their wants. They therefore set to work to remodel it according to their liking. The gold and silver workers were anxious that all goods should bear a distinct hall or plate mark containing the word "Foreign" as well as the English hall mark—the latter depending upon the town in which the mark is stamped on the goods. They really wished that the present method of stamping watch cases should be put in force for their class of goods as well.

Then the hosiery trades wanted special exemption from their English-made goods being marked at all. This was met by inserting an exemption clause.

Lastly, the lithographers were desirous of having a somewhat elaborate trade description upon all printed goods. In the latter case instances were given of the well-known German Christmas cards and booklets which bear the imprint of, "Designed in England and printed in Germany." The printers contended that the imprint only requires to be slightly enlarged to contain all that will show the British public how much work is sent out of the country which might be well done at home. Undoubtedly we want to make goods as cheap as possible. But if the fall in the price of commodities means a rise in the poor rates, then it is

false economy to buy the cheap foreign goods whilst British workmen have to stand idle. In connection with the same matter a book was produced showing how ingeniously the foreign imprint had been covered by the end-papers, thus deliberately deceiving the public as to its place of origin.

The above contention for fuller trade description by the printers is equally applicable to other crafts, such as the cabinet makers, whose goods come over here in an unfinished state and are only finished in this country, to be ultimately put before the public as English goods. It is this form of deception which has done more to increase foreign competition than any other. The English producer does not want to buy the foreign goods if he knows it; he generally does so by mistake.

Another phase of the matter was put before the meeting by the hosiery trades, especially dealing with marking all hand-made goods with a distinct mark showing that they are hand-made, as against machine-made. This part of the subject elicited from the representative of the cutlery trades that they had considered it of so much importance, that they had been pressing for special legislation to meet their case alone; and they believed that their Bill was likely to become law, as a separate measure, more quickly than the combined measure which was formulated at this meeting. They were very anxious to have the distinction between hand-made and machine-made files so plain that merchants, and others, could no longer deceive the public by palming off machine-made files for hand-cut ones.

The discussion upon the general bearings of the Bill showed that, however strong the measure might be, still, there is a great difficulty in enforcing its provisions, because it is to the interest of the workman to have it enforced, and not to the interest of the employer or merchant. Cases were cited in which workmen had been the informants of infringement of the old Act, with the result that such employé had been a marked man, and had not been able to obtain employment again in establishments of the same character of business. With this in view it was decided to introduce a clause by which the onus of prosecution could be thrown upon a public prosecutor, and thus relieve workmen from jeopardising their chances of employment by exposing acts which are believed to be detrimental to the best interests of the great body of workmen of this country.

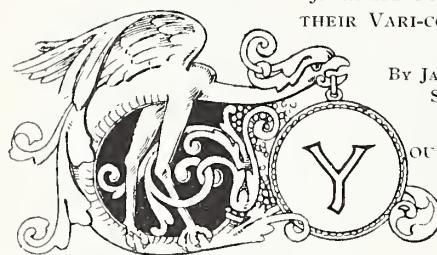
It is very plain that the whole project is an experiment to discover whether it is foreign importation of goods which is increasing the number of unemployed year by year, and increasing the number of our pauper population. The object is good, and it remains to be seen whether the remedy has the desired effect.

The Parliamentary committee of the Trades' Congress cannot guarantee that they will be able to carry the measure through the House of Commons, but they will use their best endeavours, whilst the workmen must await patiently the result. So long as the House of Commons is constituted as at present, it is difficult to expect them to adopt a measure which has the appearance of interfering with the so-called interests of capital.

Japanese Printing.

HOW THE JAPANESE PRINT . . .
THEIR VARI-COLOURED LABELS.

BY JAMES H. ROXBURGH,
SAN FRANCISCO.



you may have noticed at various times the beautiful effects produced in the printing of tea labels and other work of like character of Japanese origin.

Some time ago, while working in one of the printing offices here, I had occasion to print a great many inserts in tea labels for one of the large tea-importing houses, and I noticed that the work was done in some manner entirely different from all I had ever seen, so I began to enquire as to the method.

You can imagine my surprise when I learned that instead of the ink being applied to the block with a roller, it was applied with a brush or inking pad.

The printer first selects the colours, which are laid on one side, and then mixed with a great degree of secrecy; but, as near as I can learn, they are mixed with water, and then applied with a pad to the block.

The printer, when about to produce a new label, goes to the lumber-yard and secures a piece of pine, of the desired width and thickness, which he takes to his shop, and, with tools of Japanese origin, proceeds to true and smooth the block, after which he gouges out the design. To see him at work, you would wonder how he produces such fine work with the crude tools at command, and the seemingly clumsy way of handling them; yet his work will compare favourably with that of almost any engraver.

The cutting of the paper is done in a way that will produce a smile on the face of any pressman, no matter how sour his visage. The stock is jogged up, placed in a pile, and raised some little distance from the floor. A board is placed on top of the pile, on which the Jap. mounts, armed with a cutting implement which closely resembles one of our butcher's cleavers. With this he proceeds to trim his stock, and you would be surprised at the clean edges that he secures in this way.

The paper and block being ready for printing, the printer then makes the register edge with his brush. All is now ready. The paper is damped, and he proceeds by grasping the sheet on the corners as shown in the diagram. At A and B, the points marked in the illustration, he takes the sheet with either hand, and draws it off the pile, and places it on the block with a great degree of accuracy. If the sheet does not lie flat immediately, he blows his breath with sufficient

force to bring it right flat on the block, which has already been inked by the printer. Then a burnisher, somewhat resembling the small disc of an old Gordon press, is used, with which the back of the sheet is burnished, thereby forcing the ink *into* the paper.

When gold is called for, the colours are all printed first; then the bronze block is got ready; and, instead of size being used, the bronze is placed directly upon the block with a pad, and the printing is done in the same way as with the other colours; but it produces an effect that cannot be seen in work printed by any other method.

I am not certain as to the relation of colours, but I presume that outside colours are printed first.

When these labels are printed and put upon the matting on the outside of a tea chest, a light Japanese varnish is put upon the label. This gives it the appearance of having been printed upon the matting.

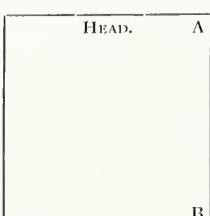
A Caution to Users of Copper Enamelled Process Blocks.

THE *Photogram* warns printers using copper-etched process blocks in which the new enamelled face (fish-glue) is used. It says that the strong pearl-ash lye which is used in washing forms removes not only the ink but also the enamelled face or "resist"—with more disastrous results if the block has been but lightly etched. Many printers have stocks of these blocks, from which they are probably not aware that they have removed the printing surface, and which will give infinite trouble when they come to be used for future jobs. The ink can be cleaned from these fish-glue blocks with turpentine, and if very stiff or dried in, brushing with not too hard a brush. Zincographers using the process should point out this fact to their customers.

It is, of course, very desirable that a method of rendering the fish-glue impervious to caustic lye, and therefore capable of being washed with the type, should be found. In large forms it is difficult to lift out the blocks before washing the type; and, as washing is usually in the hands of the P.D., or the careless apprentice, it is useless to suggest that proper care will keep the lye on the type and away from the blocks, so that the blocks can be washed with turpentine separately.

In this connection it is perhaps well to emphasise the fact that lye, if not properly cleaned off zinc blocks, corrodes the metal itself, entirely undercutting the surface in patches. If printers will not relinquish the pearl-ash lye altogether for their blocks, they must see that it is removed immediately the washing is finished; and to keep the blocks in finest condition it is well to oil them, or better still, to treat them with a coat of solid paraffin.

There are many new process workers to whom this note may be useful, and there are so many printers who do not know how to use zinc blocks that it would seem a good idea for half-tone block makers to issue a little slip notice of caution.



Printed on the STAR CHROMO ENAMEL PAPER, Manufactured by
MESSRS HENRY & LEIGH SALTER, Limited, Bollington, near Macclesfield, Cheshire.
Warehouse, Dantzic Street, Manchester.





Trade Notes.



ALLS recently made on some of the principal printing machine makers in the Leeds centre, amongst our advertisers, were very instructive as concerned the past and present condition of the lithographic trade. While there are only too certain indications that the sale of litho machinery has been retarded by the general trade depression, yet with the majority of houses there has been a steady output of litho machinery and sundries assuming considerable proportions. A more hopeful tone inspires makers everywhere, standard machines find ready purchasers, while it is gratifying to note the improvements and additions being made on every hand, with the avowed endeavour of proving that British-made machines can compare more favourably with those made abroad, the makers themselves being willing and anxious to modify the special features of their machines to suit the necessities of the trade.

Lithographers in the Leeds district are becoming well occupied, some of them having had scarcely a break even through the quiet times of 1893, though others can tell another tale. It is generally considered that the tide of business depression has now not only reached its limit, but actually turned, the trade barometer is steadily if slowly rising, and there is no doubt that the outlook is distinctly better, so that the trade may with confidence look forward to improved times in the immediate future.

FRANK HORSELL & Co., LTD., have been so fortunate as to keep thoroughly well occupied during the "slow" season, a fact on which they are to be congratulated, since it speaks so well as to the manner in which their supplies are received by the trade. They have an enviable reputation for being up to date in their lithographic materials, and amongst their more recent specialities the economic "Inkeaser," for reducing inks, has had a remarkable sale, exceeding their most sanguine expectations. A new line, "Litheaser," is being introduced for adding to inks with the object of assisting drying and distributing and producing a flat, sharp, and solid impression. A patent roller case is also being placed on the market, and is intended to replace the old moleskin ; it is of woven material in the form of a tube, and is warranted to perform its duties to perfection. The enterprise of the company well merits its continued prosperity.

MESSRS. NEWSUM, WOOD, DYSON & Co. have a wide circle of customers amongst the trade for their printing machinery and kindred supplies, and further

amongst the general public for heating apparatus—a department in which they have met with much success. Their standard letterpress and litho machines are in constant demand, though, with the rest of their confrères, they have had a share of the general depression. Amongst their better-known productions, the "Anglo-American" cylinder machines are well adapted for the higher classes of work at a much more than ordinary rate of speed, and we believe that another development of their enterprise in this direction may be shortly expected. Their bronzing machine has achieved a reputation amongst others in the market, and has had a wide sale. This machine bronzes one side and dusts both at one operation, and as a thoroughly practical machine may be urged upon the notice of printers. Varnishing, sizing, and gumming machines are also included amongst the specialities of the firm. A run through the various departments in Charmouth-street shows the facilities they possess for turning out work promptly and for doing everything necessary on the premises. Ever willing to keep pace with the requirements of customers, Messrs. Newsom, Wood, Dyson & Co. may be depended upon to retain their position as printers' engineers.

MESSRS. JOHN RATCLIFF & SONS, of Leeds, are as usual busy enough, and report a constantly increasing business, necessitating enlarged premises and new machinery. Their "Reliable" litho machines have a wide reputation as money-makers, the great speed at which they are run, combined with the undeniable quality of the work produced on them, sufficiently warranting their well-earned reputation. We may have another opportunity of further particularising their establishment, and so for the present need not go further than to state that the addition of special rack-cutting machinery and the introduction of new lathes further ensures the greatest exactitude in the firm and even movement of their machines. The firm have a remarkably wide range of customers, and have placed many machines in London and abroad. Amongst the more recent of their special machines is a novel stone-polishing machine built to the specifications of Messrs. Armitage and Ibbetson, the well-known chromo-lithographers, of Bradford. This polisher, apparently standing on an ordinary machine frame, is firm and strong, its ingenious action ensuring perfect smoothness and polish to the stones while there is an economy of time in the process, besides no sand being required. We hope to be able to give this machine an extended notice later on. Messrs. Ratcliff aim at putting the very best work into their machines, ever striving at increasing the speed and the efficiency of their cylinder presses. It is noteworthy that these gentlemen—practical workers, believe that the introduction of fast running machines will be a great leverage in the securing of shorter hours of labour.

MESSRS. GEORGE MANN & Co. have confidence in the outlook for the immediate future, and indeed they have reason to do so, if one is to judge by the orders they are carrying out. No finished machines are in evidence in their workrooms, and repeat orders—one

we saw being for two quad-crown and three double-crown litho machines—amply attest their popularity. The “Climax” litho and letterpress machines are popular in the trade, special attention being given to the rolling power and to ensure smooth and rapid impression. Their bronzing machines—Bush’s patent—are widely finding favour, and tin-printing, two-colour machines, litho and copper-plate presses, ink and colour mills, all bear the impress of a reliable house.

MR. HARVIE F. HIRST, litho artist and designer, newly in business on his own account, occupies a studio in a central position in Leeds, at 60 Prudential Assurance Buildings, Park-row. He has been kept fully at work, and may be recommended for a trial; his enterprise should obtain for him more than a local reputation.

MESSRS. TAYLOR BROS. report trade generally as good and chromo-lithography in the district as fairly satisfactory. Their new season’s goods are in progress and may be expected to retain for the firm their reputation as amongst the foremost and most enterprising of trade printers.

COLLOTYPE has introduced itself with a rapidity which no other branch of the printing trade has equalled; but there is still plenty of room for extensions and perfections, especially for printing in colours, and therefore it is practically in its infancy. Almost every day improvements are made. The firms who are at present foremost in the process of colotype printing on the Continent are Vogel-Albert and A. Frisch, in Berlin, and Sinsel & Co., Leipzig, but there are many busy workers in this country who are hard at work on the study of the best foreign methods and will soon overtake them.

About eighteen years ago, Messrs. Schmiers, Werner and Stein, who have devoted themselves to printing machines for over a quarter of a century, had already made the best and most accurate machines for colotype printing, and these are also the machines on which the first coloured colotype pictures have been printed in Berlin and Leipzig. For many years they have devoted much time and attention to perfecting these machines for the best class of colotype (plain as well as coloured) and are constantly bringing out improvements, so that their machines are now models of mechanical perfection, and, as far as quality and finish of workmanship is concerned, beyond competition. The numerous repeat orders received form the best proof of their excellence. Their latest improvement (which as yet is little known) is a patent damping apparatus, by means of which the glass plate is damped automatically while the machine is in operation. Through this improvement, double the number of copies can be printed in the same time as formerly, when, after twenty or thirty copies, the plate had previously to be damped by hand. This apparatus has the further advantage that it can also be used for drying the printing plate. The apparatus is a patent, and can only be supplied by Messrs. Schmiers, Werner & Stein.

A further notable point in their machines is the excellent laying-on apparatus specially designed for

collotype in colours. This works with the greatest exactness and perfection, and is claimed to be unequalled by any other make. In short, the machines constructed by Messrs. Schmiers, Werner & Stein combine everything that can be desired for first-class collotype printing, and the fact that they have up to now supplied over four hundred machines to the leading firms all over the world—over a hundred of these being in Great Britain—is another proof of their excellence.

They also make, amongst others, machines for printing direct on tin, in any number of colours, which are as perfect in their way as the collotype machines. They are in use in leading establishments all over the world; and in Italy, where the best of this class of work is done, they have almost the monopoly. Two of these tin printing machines have recently been supplied to well-known British firms.

The sole agents for these machines are Messrs. F. Kühn & Co., 60–66 Basinghall-street, London, E.C., who can give further particulars.

A POPULAR notion was recently knocked over at the London Institution, in a lecture on “The Mysteries of Colour” by Professor Bidwell. He proved a strange, true thing, which will make the amateur water-colour painter disbelieve the evidence of his senses. Blue and yellow do not make green, as is commonly supposed. When Professor Bidwell uttered this statement the audience seemed incredulous. But when he caused a ray of pure yellow light from the electric lantern to be projected on to the screen, and then threw on the top of the broad yellow patch another of pure blue, they actually cheered, for true enough the result of the mixture was not green but white. The mystery is a very simple one. Painters never get either pure blue or pure yellow on their palettes. Such pigments always contain green, and when the blue and yellow coalesce into white the green comes out. The lecturer next showed that yellow, far from being a primary colour, is nothing but a mixture of red and green. We are accustomed to think of gold as yellow, and copper as red, but beat them very thin until a strong light will pass through the sheet, and behold, gold is a deep green, and copper a dark blue. The lecturer explained that colour is a mere mechanical matter, depending purely on the sort of waves that happen to reach the eye. He referred to “colour blindness” as frequently produced by smoking “black shag” and “cut cavendish.”

THE December number of *Process Work*, a monthly trade circular published by Messrs. Penrose & Co., 8A Upper Baker-street, Clerkenwell, E.C., contains some excellent specimens of work done by the “Enameline” process of zinc-etching. The very finest dots, as well as the coarsest, are rendered without deterioration in sharpness, and the full effect of the original is secured, whilst the process itself is said to be simple and easy in working. Messrs. Penrose supply all the materials for the process, and give a personal demonstration with full particulars to those desirous of knowing how to work it.

Printed with Mander Brothers' Lithographic Inks.
On Smith & MacLaurin's Celebrated Chromo Paper.

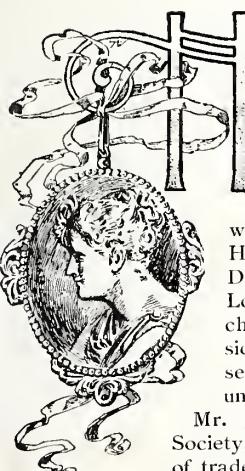
Works - Wolverhampton,
Johnstone, Scotland.

Colour No II. 2nd Grey
Specimen of Chromo Lithography in II printings, drawn direct and printed at
machine from plates manufactured by the Patent Lithographic Zinc Plate Co Ltd Hull -
S.C. MANDER & CO LTD LTD

Trade Reports.

(From our Special Correspondents.)

HANLEY.



HANLEY BRANCH of the Amalgamated Society of Lithographic Artists held their annual dinner at the Market Tavern, Hanley, on February 9th. About forty members and friends were present, besides representatives of kindred societies. Mr. H. J. Leary, president of the branch, was in the chair, supported by Mr. H. J. Green (vice-chairman), Messrs. D. Price (secretary), A. Wood, H. Lockley, F. Hall, and others. The chairman announced that owing to sickness in his family, the general secretary, Mr. Chas. Harrap, was unable to be present.

Mr. J. Wright, in proposing "The Society," said it used to be the action of trade societies and workmen generally to combine simply to protect themselves against the intrusion of employers and sustain themselves with a living wage and just rights; those objects were still maintained to the same extent at the present time, but the trade societies had extended their views in other directions, and they now combined for the purpose of obtaining municipal and political representation. The local branches connected with their trade combined for the purpose of helping each other when in difficulties, and the benefits resulting had been very great. Mr. D. Price responded.

Mr. Green proposed "The Hanley Branch." He said the meetings of the branch had been much better attended during the past year, and the benefits resulting from membership had been greatly felt during the recent slackness of trade.

Mr. D. Price responded, and said that a great deal of money had been paid out in benefits during the past year, about one third of the members of this branch being unemployed at one time owing to slackness of trade; but he was pleased to say that at the end of the year they found that the income had exceeded their expenditure. This was very satisfactory indeed, and he asked the members to support the society in every possible way, which would ultimately be for their own benefit.

Mr. A. Wood, in proposing "Kindred Societies," spoke on the advantages of organisation, and referred to the benefits of trades unionism.

Messrs. Clark, Robinson, and Cartledge responded on behalf of the kindred societies. The other toasts were "The Visitors," "The Press," and "The Host," the remainder of the evening being spent convivially.

EDINBURGH.

MESSRS. BANKS & CO.'s employés held their annual dinner at the "Melville Hotel," Nicolson-street, on the 26th January, 1894, W. Banks, Esq., in the chair. Mr. S. Munro, in giving the toast of "The Firm,"

alluded to the successful career which it had had, having risen from a small business to the largest in the city; and also mentioned the approaching marriage of the chairman, which was suitably replied to by Mr. W. Banks. The musical part was carried through by the members of the staff, and a very enjoyable evening was spent.

UNDER the auspices of the Edinburgh branch of the Amalgamated Society of Litho Artists and Engravers, over forty gentlemen sat down to dinner at the "Melville Hotel," on the 10th February, 1894. Mr. J. M. Fender presided, and Mr. A. Walker acted as croupier. In replying to the toast, "The Amalgamated Society," the chairman gave a brief sketch of its history and progress, and congratulated the members on its present healthy condition. - The membership had now increased to about forty per cent. of the whole trade in Edinburgh, and he expressed the hope that its past record of work performed, and promise of future benefits, would be an inducement to non-society men becoming members. An enjoyable musical programme was afterwards successfully carried through.

THE employés of the Edinburgh Geographical Institute (John Bartholomew & Co.) held their fifth annual soiree, concert, and assembly in the Literary Institute. The gathering was a highly successful one, notwithstanding the efforts of "Jupiter Pluvius" to mar the proceedings. The chair was occupied by Mr. J. G. Bartholomew, F.R.G.S., who, in the course of his remarks, pointed out the necessity for united effort in the face of the keen competition now existing, and in order to attain a higher standard of excellence in the work. Christmas cards were "printed in Germany," but he hoped it would be long ere such an imprint was seen on maps and plans. An excellent programme of songs, recitations, and Highland solo dancing was gone through by members of the staff and friends. Over forty couples remained "to tread a measure." The efforts of the committee—with Mr. J. Mackie as secretary, and Mr. T. McDougal as M.C.—were fully appreciated by those who took part in the evening's enjoyment.

TRADE is still bad here, with only a slight improvement.

LONDON.

CONCERNING "Designed in England—printed in Germany," the London correspondent of the Manchester *Examiner and Times* chattily writes:—"It is pleasant to notice that the lithographic and art-colour printers—the class which is, perhaps, most of all affected by foreign competition—are now bestirring themselves with a view to keeping English trade in their own hands. The complaints hitherto made against English lithographic work are that in certain grades it is higher in price, and not so good in quality, compared with work executed in Germany. But 'all this is to be changed.' The National Society of Lithographic Artists, Designers, and Engravers have opened a class-room and studio at 33 Clerkenwell-road, London. Here the business will be taught by practical men and capable artists, free to those engaged in the trade, while students will be called

upon for a nominal fee. 'Life classes' will be held two or three nights a week, so that draperies for theatrical and other posters may be drawn from the living model, and a special feature will be made of the delicate process of blending colours in printing. There is still hope that the words, 'Designed in England—printed in Germany,' which are something in the light of a national disgrace, may yet disappear from our posters, our Christmas cards, and our coloured illustrations."

DERBY.

THE severe depression amongst lithographers shews little prospect of removal, and though the large majority of employés are now working full time—only two being reported by the Society as out of work—the prospects of a continuance of even this condition are anything but encouraging.

THE graphic trades show up well in the Derby and district Trades Council. The treasurer is Councillor Thomas H. Wigley (Typographical Association); the assistant secretary is Mr. W. Clarke (Amalgamated Society of Lithographers, and our own agent in Derby); and amongst the four labour members on the Derby School Board is Mr. T. Mawby (Typographical Association). Mr. Brailsford represents the bookbinders on the Council.

HULL.

AT the Hull County Court recently the old question of the payment for sketches made to customers' orders came up again, between Messrs. Goodall & Suddick, of Leeds, and Messrs. Shaw & Gaskell, engineers, and was decided by Judge Bedwell in favour of the plaintiffs, with costs.

CARDIFF.

MR. G. D. KELLY, general secretary of the Associated Lithographers' Society, on Tuesday, February 27th, gave to the members of the local branch a brief *résumé* of his recent visit to the World's Fair, which was very interesting. An enjoyable evening was spent.

Trade is in a very quiet state in Cardiff, though somewhat better than it was a couple of months ago.

A BROADSHEET full of specimens of copper engraving is to hand from Mr. W. J. Frewer, 282 High Holborn, W.C. The designs shewn on the sheet, upwards of thirty in number, are in a free and effective style both in ornamentation and lettering, the finish being admirable in every respect, and the printing leaving nothing to be desired. Mr. Frewer is undoubtedly *facile princeps* at his trade, and can be relied upon to give every satisfaction to his clients.

THE popular *Practical Photographer* (Percy Lund and Co., The Country Press, Bradford) is now under new editorship, and with the April issue will have a permanent increase in number of pages, and be much more profusely illustrated than heretofore. The price will be increased to twopence monthly. A large number of prizes are being offered for competitions for designs, particulars of which are announced in circulars to be had of the publishers.

Answers to Correspondents.

A GLOUCESTER correspondent says, "I have tried zinc plates of my own mulling, and I find that the artist's work is easily done upon them, but when I wash off with turps in the usual way the work does not roll up again perfectly as on stone. I do not coat the plates with any preparation after mulling."

The correct way to roll up zinc plates uncoated is to wash off with turpentine—without removing or moistening the gum previously; perhaps our friend goes about it in the old-fashioned way, as if for stone. After washing off, roll the plate in solid black and then roll out clean in the usual manner; if the work then rolls up weak, it can be strengthened by rubbing up gently with thin ink and plenty of gum. In washing out, add a little oil to the turpentine.

À la Trochard's Pommade Emolliente, full particulars may be obtained from B.L. No. 8, or by communicating with E. Trochard, 66 rue St. Brice, Chartres (E. & L.) France.



SPECIMENS of work to hand from Messrs. Hillman and Nosworthy, 1 Dyer's-buildings, Holborn, show they are artists thoroughly competent to undertake all classes of work. They make a speciality of plans, maps, and similar work, and by the introduction of artistic tree designs, make a plan somewhat more suggestive of the nature of the property than the usual bald designs that pass muster in these diagrams. We notice that in all cases the work is clean and sharp, and whether plain or ornamental its value is enhanced by the bold and effective titles and the writing, which is of a highly finished character. We recommend this firm to those of our friends who require careful work combined with striking originality and artistic finish.

SMALL ADVERTISEMENTS.

Situations Wanted—Three Lines for a Shilling.

For re-postage of replies received at Publishing Offices,
Six Stamps extra must be sent.

Three lines (21 words) of the following classes, prepaid:

1/6	{ Situations Vacant Businesses to be Let or Sold Plant or Machinery Wanted or for Sale }	1/6
		EACH ADDITIONAL LINE, 6d. EXTRA.

WANTED.

LITHO ARTIST (for labels principally) with capital. Advertiser having good connection would find equal share.—R. MIERS, 152 High-street, Burton-on-Trent.

SITUATION WANTED.

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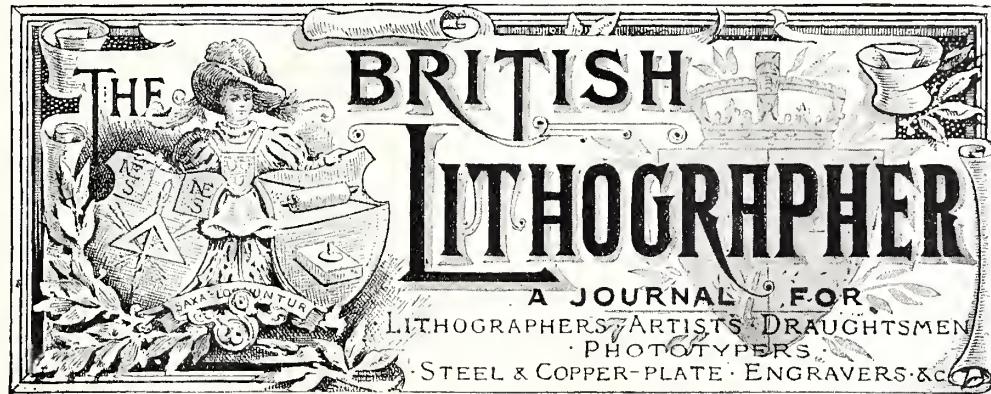
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DE MONTFORT PRESS LITHO

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AND GLOSSED WITH THEIR GLOSSING VARNISH AT MACHINE.



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 CIRCUMSTANCES having necessitated the voluntary winding up of RAITHBY, LAWRENCE & CO., LIMITED, with a view to reconstruction, subscribers and advertisers will please note this will not affect the continuance of THE BRITISH LITHOGRAPHER. The B.L. and the general business of the De Montfort Press continue as before, and the publishers trust to the sympathy and co-operation of their many friends and well-wishers to make this widely known.

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OUR SUPPLEMENTS.

MESSRS. MANDER BROS. SPECIAL SUPPLEMENT.

 THIS jam label, reproduced by kind permission, is given as a sample of a popular class of label printing. As ready for the jars, the label should be cut close to the coloured centre, forming a round-cornered label with blank at bottom right-hand corner for name of maker.

The label is printed in gold and nine colours, in the following order:—Gold, yellow, vermillion, light blue, pink, dark blue, light grey, dark red, brown, and dark grey, from retransferred stones, being afterwards glossed at machine with glossing varnish.

MESSRS. A. B. FLEMING AND CO.'S, LTD.,
SPECIAL SUPPLEMENT.

This inset shows the admirable qualities of the litho inks prepared at the Caroline Park Works. The four colours used may be particularised as follows:—

	Letterpress.	Litho.	Dry.
Carmine Madder Lake (1088)	8/- lb.	9/- lb.	9/- lb.
Brilliant Blue Lake (1068)	6/6 lb.	7/6 lb.	7/6 lb.
Rose Madder Lake (1091)	5/- lb.	6/- lb.	5/- lb.
(Reduced to make the pink)			
Fine Black Litho Ink (30x)	—	3/- lb.	—

These inks will withstand application of spirit varnish. Our printers aver they have never handled finer colours, and those who deplore the "here to-day and gone to-morrow" character of inks when exposed to daylight, should try these of Messrs. Fleming, and note results.

MESSRS. GROSVENOR, CHATER AND CO.'S
SUPPLEMENT.

The supplement on Messrs. Grosvenor, Chater and Co.'s Fine Art "Acme" Paper, is taken from the central portion of a calendar, royal size, for a firm of cement manufacturers, the figure being an allegorical study intended to represent architecture. Effective and pleasing as a calendar, the section utilised as a supplement evidently suffers from the absence of surroundings to tone it down somewhat.

The "Acme" paper used has worked equally well as the best chromo paper, also possessing the advantage of not stretching.

THE ARMS SUPPLEMENT, PLATE 7.

This is a further instalment of the arms of boroughs, towns, etc. Messrs. Gilby & Herrmann's "made in London" inks were used in printing this supplement, which was drawn direct on stone, and worked at machine from retransferred stones. The two colours shewn are strongly commended for their easy working and high-class colouring properties.

THE PAGE OF SUGGESTIONS, PLATE 5,

forms a nucleus for many adaptations in the hands of the artist, the Egyptian border pieces more especially. This supplement was photo-lithographed from a pen-and-ink drawing, and printed from retransferred stone.

MESSRS. MILLAR AND LANG'S

samples of embossed cards are particularly interesting in view of the notice on another page, and in connection with the recent embossing from stone dispute. Further particulars of their work are included in the notice on page 138.

FOR next issue, arrangements have been made with Messrs. James C. Norbury & Sons, Manchester, to insert a supplement of a specially attractive character, illustrating a new process, of which they are the inventors.

Specimens of lithographed work from originals prepared by the new process have been sent us for inspection, and are sufficiently interesting to warrant a detailed notice with the supplement arranged for next issue.

MESSRS. ALEX. SEGGIE & SON report a good demand for their latest ink grinding mills, with iron, granite, or finest genuine chilled iron rollers. A batch of eminently satisfactory testimonials to hand shews that in large output, perfection of grinding, and general efficiency, these mills will be hard to beat.

MESSRS. G. MANN & CO., Elland-road, Leeds, have undertaken an order from the Bank of England for a royal litho machine complete, fitted with their new special inking arrangements, similar in several respects to the ten machines supplied to the Crown Point Works last year, and to other important houses.

THE Christmas cards now being put into the hands of stationers preparatory to supplying the demands of the next season, entirely apart from the genuine interest they must call forth from all of artistic tastes and who appreciate good things when they see them, afford an interesting study on the progress being made in this attractive branch of lithography. The ultimate result of the past twelve months of busy designing and careful working has been to produce cards in which artistic ability, novelty, and cultivated taste are everywhere apparent. As has been said on previous occasions, the Christmas card industry has the happy faculty of creating the demand by reason of the supply, and this is to a large extent true, popular taste—at least in this direction—usually following in the wake of developments so decidedly and obviously intended to attract and supply public demands. A very encouraging sign of the times is that amongst a large proportion of the specimen books and samples issued, the advance in British cards, so loudly called for last season, is now patent to all. Those who have opportunities of making comparisons between the older samples and these more recent productions, readily conclude that home manufacturers are awakening to the extent of the powers they possess in the direction of design and taste amongst their employés, and the capabilities of machinery made by British engineers. To these, and to the spirit of enterprise stimulated either by competition, by necessity, by patriotic motives, or possibly by an infusion of the three, must be attributed the growing standard of production in this direction; and it is most gratifying to be able to report that material progress is being made.

CONCERNING SHOWCARDS.—We had occasion in recent issues, and have again noticed the subject in the present number, to warn lithographers of the gradually increasing use of the iron show-plate which threatens to displace lithography in a sphere formerly its greatest stronghold. In this direction was pointed out the bearing of the case so far as it is proving detrimental to a large section of lithographic printing, by advising those who are clinging to the conventionalised methods to adapt themselves to the new situation. Our notes on this subject are endorsed by a valued contemporary across the Atlantic, who also points out that it is another illustration of the difference between the "waiting class" and the "inventive class" of lithographers. So long as old fields of consumption are glutted and profit is wanting, so long will those who are enterprising seek to open new territory for their industry or to provide customers with something radically unique in advertising their wares. The non-progressive should "graduate" from the "waiting class."

THE April issue of *The Studio* worthily sustains the high standard it has attained in the world of art. Attractive and useful reading matter is supplemented by a wealth of illustrations, amongst them being an auto-lithograph, from transfer-paper, of an unpublished drawing by Mr. J. McNeill Whistler, entitled "Gants de Suède."

Photo-Lithographic Processes

COLLOTYPE.

CHAPTER XVIII.—(continued).

REVERSING THE NEGATIVE FOR COLLOTYPE.

6. REVERSING BY STRIPPING THE FILM FROM THE PLATE.

HON treating this branch of the subject, nothing could be more fitting than the remarks of Prof. W. K. Burton (of Japan), published in his treatise in 1892. He points out that the difficulties of stripping films are :—

- (1) The films refuse to strip at all. In the case of a freshly developed negative a process may be quite successful, whilst with a negative six months old or more, which has been treated with alum, the same process is not at all successful.
- (2) The stripping will frequently strip off the new support, rather than the film being stripped from the glass.
- (3) The film, when stripped, is liable to stretching and distortion.
- (4) The film becomes hard and brittle when dry, and is liable to crack.
- (5) The film curls in drying, and renders it impossible to get the film to lie flat upon the collotype film.

Prof. Burton goes on to give the details of a process of stripping which he has always found most successful for either old or new negatives. His method is as follows :—

The varnish (if it has been varnished) must be removed by treating with hot methylated spirit. If the negative has not been originally treated with alum—especially those developed with ferrous oxalate—it must be immersed in alum solution for a few minutes; then withdrawn and dried. This alum solution prevents the hot gelatine solution, subsequently used, from melting the film. The negative is warmed and levelled to receive a film of gelatine. The gelatine solution is prepared from Coignet's "Gold Label" gelatine, in the following proportions :—

Hard gelatine	2-oz.
Water	10-oz.

This solution is prepared, as in all previous recipes, by soaking the gelatine in cold water, and finally making it into a solution by applying heat. This solution may be heated to nearly boiling point, and should then be filtered through flannel. This filtered, warm gelatine solution is poured upon the warm, levelled negative. The quantity used should be about

four ounces to a square foot, which gives a film of about $\frac{1}{100}$ inch. [The film on an average dry plate is about $\frac{1}{2000}$ inch thick.] The amount of gelatine solution may be reduced to two ounces per square foot for very delicate work. Films of over eight ounces to the square foot become too thick for practical use. The thicker the film, the longer will the negative and film have to be treated with the subsequent solutions.

A saturated solution of chrome alum is prepared, and into it, drop by drop, is added liquid ammonia, until there is the slightest possible permanent flocculent precipitate. The alum solution thus neutralised sets more quickly. Into this solution the negative, with its film of gelatine, is placed for five minutes. It is then washed perfectly clear of the blue colouration of the chrome alum, and is placed in a bath of methylated spirit for about half an hour. From this bath the negative is taken and blotted dry. It is then submitted to a bath of :—

Sulphuric acid	1-oz.
Water	2 pints.

The sulphuric acid is the ordinary commercial acid, and the strength of this bath may vary considerably without injury. The negative is left in this bath till the greasiness caused by the spirit bath has all disappeared. That takes about half an hour, when it will be found that the film may be lifted and will leave the glass easily. Before removing the film, however, the negative is placed in a solution of :—

Liquid ammonia	1-oz.
Glycerine	1-oz.
Water	2 pints.

In this solution the glycerine tends to keep the film flexible, and the ammonia neutralises the acid. In about five minutes the film can be taken from the solution and tested, to see if the acidity has gone. It may be tested by tasting it. When the acidity has disappeared, the film is mounted upon a glass, covered with blotting paper, flattened and dried by the use of the squeegee. The glass plate, with the film upon it, is placed in a warm place to dry. Usually in a few hours it is best to fasten the edges of the film to the glass by strips of paper and paste. When thoroughly dry—and not a moment before—the film can be readily lifted from the glass by inserting a knife blade at the edge. It is then in a good condition to handle, and may be printed from either as a direct or reversed negative.

The glass which is used in the latter part of the process is well rubbed with a solution of beeswax in benzine, after which it is rubbed with talc. If the negative is dried spontaneously after the chrome alum bath, instead of by the use of methylated spirit, it is very probable that later on the gelatine support will strip from the negative film, instead of the negative film leaving the glass.

The acid bath and the ammonia and glycerine bath may be used over and over again until their virtue is lost, which can be determined by test. Prof. Burton adds that he tried the use of vulcanite instead of glass, as a support to dry the film upon in the latter part of the process, but it was not successful. The final drying of the film takes as long as twenty-four hours.

Another method of stripping a film was given by Mr. A. Pumphrey in 1889, and can be well recommended. In the first place it is assumed that the negatives have been treated in alum, and have been varnished. Prof. Burton's process, already described, gives sufficient details on the question of alum and varnish, which are also applicable to this process. Mr. A. Pumphrey's method is: Prepare a thin film of gelatine by any method well known to photographers, and soak it in a solution of:—

Hydrofluoric acid	1 part.
Water	60 parts.

When moistened through, spread a thin coating of india-rubber solution upon a sheet of paper and lay the gelatine film upon it. The gelatine after soaking in the acid is very adhesive, and as soon as it is fastened upon the rubber solution it can be turned over on to the negative which is to be stripped and flattened down upon it with the squeegee. The hydrofluoric acid soaks through the negative and releases it from the glass. The negative becomes attached to the gelatine film, which is ultimately released from its paper support by soaking the back of the paper with benzol, which dissolves the rubber solution. In this way the negative film is released from the glass, and becomes firmly adherent to a gelatine film, and can be used as in Prof. Burton's method either for direct or reversed printing. Mr. W. B. Bolton has discovered that any acid which is strong enough to act upon gelatine will serve the purpose, in place of the injurious hydrofluoric acid. It was this discovery which led Prof. Burton to adopt sulphuric acid.

Another method of stripping was given by Mr. H. J. Burton in 1889, and is as follows:—It is assumed that the negative has been treated with alum and varnish, and it requires therefore the same treatment as already described in Prof. Burton's method. The cleaned negative is accurately levelled, and coated with a layer of collodion of a moderate thickness. In a quarter of an hour this film will set, and can then be soaked in clean water until all appearance of greasiness has disappeared. When it is clean, a few drops of hydrofluoric acid are added to the bath and it is gently rocked. The film soon begins to detach itself from the glass. Another glass plate is prepared with a film of gelatine. When set and dry, this plate is put into the bath with the negative. The acid in the bath excites the adhesiveness of the gelatine, and the film negative attached to the collodion may be taken off the glass, turned over and floated on to the new gelatine film upon the other glass. It is then withdrawn from the bath and allowed to dry, either spontaneously or under blotting paper.

As already noted, other and less injurious acids will serve the purpose of the hydrofluoric acid.

Supposing that these negatives are of such a value that they must be returned to their original state, that is non-reversed, then by a somewhat similar course of action the negative can be turned round again, and mounted upon a glass in its original position as required for silver printing. To effect this, a film of gelatine containing chrome alum is prepared and placed upon a glass plate. This is placed in warm

water to make it just feel soft and slimy. It is then placed in cold water. The reversed negative plate is placed in a bath of water containing a few drops of hydrofluoric acid, or other acid, until the whole film—three films—shews signs of coming off the glass support. When it has reached that state, remove it to cold water and rinse it; then turn the film over and float it on to the softened gelatine film upon the other glass plate. It is then withdrawn from the bath, and squeegeed gently down under blotting paper and allowed to dry. But the negative has upon its surface the original collodion and gelatine films used for reversing it. The gelatine film can be washed off by the use of warm water, and the collodion film can be dissolved off by alcohol and ether. When thoroughly cleansed it can be varnished, and is practically the same size and in the same position as when originally photographed upon the sensitive film.

Another method of stripping, given in Allgeyer's collotype process, is:—Flood the negative with a gum arabic solution (1 of gum to 20 of water) to which has been added a few drops of chrome alum solution (1 of chrome alum to 60 of water). Allow it to dry, and do all retouching with a lead pencil. Put an edging of tallow around the negative to prevent overflow, then level it accurately. Warm the negative moderately, and coat it with a solution of:—

Gelatine	20 parts.
Glycerine	3 "
Alcohol	20 "
Water	80 "

Allow it to set, and place it against a wall, standing upon blotting paper. It will be quite dry in a day or two. When dry, it is coated with a thin collodion film and dried. After standing in a damp place two or three hours, it can be cut around its edge and stripped from the glass, forming a pellicular film which may be used for direct or reversed printing, and preserved in a book. Although this process seems very simple, yet it is necessary that the original glass must be prepared for stripping, or that the negative should be treated with an acid to release it from the glass, as in the three foregoing processes.

[To be continued.]



ENGRAVING IN THE STATES.—In a recent article (in *St. Nicholas*) upon the dollar note or bill of the United States, it is shewn how the engraving is all done piecemeal by a number of specialists—the engraver of the portrait, the seal, the figures, the lettering, the borders, etc.—and of these specialists, there is only one in the United States of America who can manipulate a certain eccentric engraving machine, by which the fine intricate scroll and lace-like work around the portraits and upon the back of the note are engraved. The machine is very expensive, and is of a most complicated character, thus almost absolutely preventing anyone counterfeiting the bill. But, on the other hand, there being only one man who understands the machine, it will be awkward for the States if they fail to look after an apprentice, should they be suddenly deprived of the services of their only man.

All Good Wishes

Good Luck

PREACHER &
PROSPERITY

Best Wishes
Your ^{for} Happiness

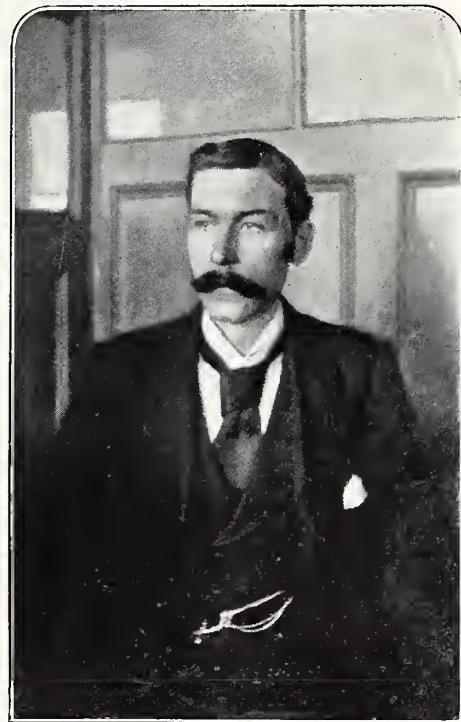
Our Portrait Gallery.

MESSRS. MILLAR AND LANG, GLASGOW.

MUST now, when so much is being talked about German monopoly of high-class litho work, a brief notice of Messrs. Millar & Lang's doings may not be inapt. This firm has been in business only a couple of years, but in that time has produced work which effectually disposes of the belief that first-class litho

over his foreign competitors, as it is impossible that the foreigner can gauge the taste of the public in the same manner as the man who is continually in touch with the people who buy.

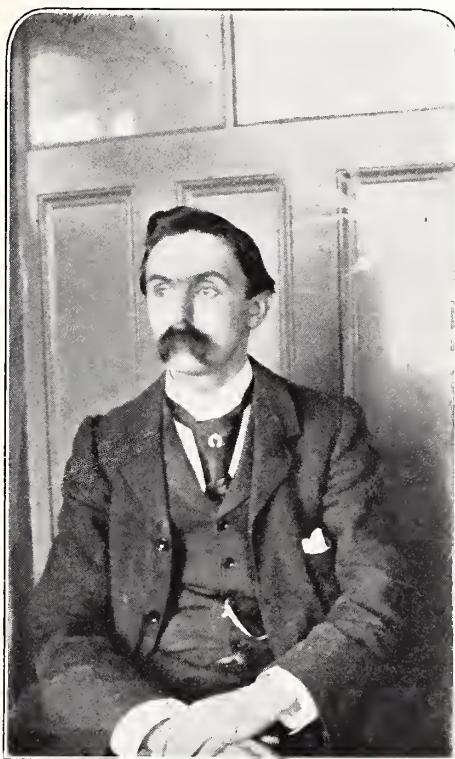
Messrs. Millar & Lang's factory is in Robertson-street, Glasgow, and consists of five floors with a total area of 15,000 square feet, and even with this



MR. MILLAR.

(*Messrs. Millar & Lang, Glasgow.*)

work, as applied to Christmas cards, etc., can only be done in Germany. The cards they have produced, particularly this season, are quite equal to the foreign productions in point of technique, and have a vast advantage in the possession of very appropriate mottoes and a redundancy of ideas, in comparison with which the foreign competitor is lacking. There is not a single card this firm produces which does not "take," and it is by giving his goods the necessary fillip by means of a quaint idea or a piquant motto that the British manufacturer has a distinct advantage



MR. LANG.

large working space they are beginning to feel pinched for want of room, so rapidly has their business increased. One gets lost amongst their huge litho machines and the multiplicity of attendant plant in the shape of rotary cutters, hand-presses, platens, blocking presses, guillotines, envelope machines, etc.

The firm are to be congratulated on their very remarkable staff of workmen, got together with infinite trouble by Mr. Millar, each of whom is in the first rank as a craftsman in his own particular line. Among them is Mr. McAleese, the inventor and

patentee of the New Rotary Zinc-plate Machine, of which great things are expected.

Mr. Millar, who looks after the practical department, was trained in Edinburgh, and has had a varied experience in the artistic world, beginning life as an intaglio engraver, but latterly devoting all his time to high-class designing, in which branch he has few equals. At the Edinburgh School of Art he took the gold medal for design some years back, besides a number of other prizes. As a writer of verses, too, he excels, and his name is quite familiar to the readers of the magazines and journals of the north. A considerable proportion of the verses in the firm's Xmas and birthday cards are his productions. For a number of years he was attached to the firm of Geo. Waterston and Sons, Edinburgh.



Mr. Lang, who takes charge of the commercial department of this enterprising firm, comes from a very old historical family, being a direct descendant of the Lochinvar and Kennure Gordons, who, along with "Derwentwater," took a very prominent part in the history of Scotland during the rebellion. He is a grandson of the late Viscount Kennure and Lord of Lochinvar.

The firm's particular lines are Xmas and birthday cards, ball programmes and menus, fancy stationery, embossing to the trade of showcards and other large work, all of which are absolutely and in every detail made on the premises. The trade will remember that the firm has lately emerged from an action in which they were successful in sustaining their objection against a patent taken out for embossing from stone, and have thus preserved the trade rights in this direction which were in danger of being lost to lithographers. This class of work Messrs. Millar & Lang have brought to great perfection, and do a large and varied business in fancy embossing of all kinds.

A special feature of this firm's productions is their series of private cards, books of which are distributed to retail stationers, and customers ordering from the samples shewn get the order executed the following day, this being accomplished by having a large number of platen machines specially reserved for the work in the months of November and December.

Most of the machinery in use at the factory in Robertson-street was supplied by Messrs. Furnival, and has given every satisfaction; Messrs. Millar and Lang are convinced they turn out some of the finest machines in the market.

The experience of this firm shews that it is quite possible to make a successful stand against foreign competition in the fancy printing trades, and that if brains and pluck are united, and a determined effort put forth, there is no reason why all our chromo work as applied to cards, etc., should not be produced in this country, and the legend "Made in Germany," the oft-quoted reproach to the British litho trade, become a thing of the past.

An examination of general specimens of work by Messrs. Millar & Lang shows the class of production they are building their growing reputation upon. Aiming at producing work to satisfy the highest taste and the most varied requirements, they have been singularly happy in the production of original designs, happy effects, and appropriate wording and finish to the cards they make such a specialty of. Having no opportunity of inserting anything approaching a complete notice of the firm's work, a mention of a few representative classes will give at least some idea of the style and character of their productions.

Amongst the very acceptable autograph cards, the "Pansy Blossom" series is sure to find favour amongst those who send out happy reminders to friends at the festive season. The cards are folded in three, are white surfaced, with ornamental gold edges, and embossed in colours and gold. The reading matter is in the interior, and space is left for the autograph of the sender. In the "National" series—a larger size—and in others, attention is especially drawn by the tasteful colouring and general *chic* appearance of the cards individually. They are boxed 12/12, with embossed covers.

To particularise some of the general Xmas and New Year cards in the "National" series, one sees that these have provided wider scope for treatment, and this has been taken advantage of in a most satisfactory manner—the evidences of tasteful originality, care and finish in printing, and high-class treatment, being everywhere apparent.

Probably one of the most acceptable and pleasing features of the cards is the free use of embossing effects. Almost all the cards show embossed corners, borders, ornaments, figures, or grounds, and the combination of gold with embossing is particularly effective and attractive.

The cards present a large variety of colours, sizes, shapes, and subjects. Representing the first class, No. 222 is a white surfaced folding card, 5 x 4-in.,

with gold ornamented edges, embossed corners, and bearing a most realistic pansy spray, embossed in colours, on the front page. An inset containing greetings is attached with pale blue silk cord, completing a handsome card. No. 229 (5 x 3-in.) is a type of a series noticeable for an attractive front page picture, this containing a pretty monochrome view of a mountain torrent, with floral border surmounted by shepherd's staff and cap embossed in gold. The inset is delicately treated in quiet contrast to the cover. No. 231 (4 x 3-in.) contains greetings embossed on front cover, with floral surroundings and gold finish, of particularly pleasing effect. In another style, No. 237 is a three folder, embossed "Auld Lang Syne," with emblematic design in colours and gold. Other cards in various sizes and folds cover a wide range of subjects and treatment.

Amongst the "National" series of humorous cards are subjects appropriate to almost every joker. Golf, football, cycling, and skating have special designs; while the Highland whiskey votaries are drawn upon to add to the fun. Appropriate designs and wording are very apparent here, and such cards as "O wert thou in the cauld blast," shewing a piper skirling away in the wind; "May you ne'er lack a freen at a pinch," with a horn snuff box; "A Tee Shot," a comical and forcible golf card; all show that the sense of humour has happily hit the right point.

There is also a good series of children's cards, together with inexpensive reproductions of many of the humorous cards in one colour as a cheaper line.

The work generally gives every assurance that the firm are within measurable distance of competing with the highest class of foreign productions of a similar character. As a young firm, they have most rapidly secured a hold on the market and a name in the trade. We trust they may increasingly prosper.

Wholesale houses can see the firm's samples at the following branches:—London, 53B Aldersgate-street, E.C., Mr. Ernest Abrahams; Birmingham, 145 Great Charles-street, Mr. C. D. Eaton; Liverpool and Manchester, 32 Cannon-street, Manchester, Mr. H. Farrar; Bristol, Redcliffe-parade, Messrs. Morse and Co.; Bradford, 44 Hillside-road, Mr. B. Hirst.



LECTURING on the ruby at the Royal Institution, Professor Judd alluded to the changes in colour which certain kinds of glass undergo when exposed to light. He said that the green glass panes used in the conservatories at Kew gradually changed through various shades of yellow to a distinct purplish hue under the prolonged action of light. Rubies change their colour in a curious way under the action of heat. Bluish rubies turn green, and on cooling retain their original tint. The blue sapphire turns white, and the yellow corundum crystal becomes green. Such changes prove that colour is dependent upon the crystalline constitution of the mineral, and not upon any introduction of a new pigment. In other words, colour is simply due to modifications of the white light of the earth.

The City and Guilds

Examination in Lithography.



ON May 2nd last, the session of the technical classes in printing, etc., was brought to a close with the written examinations. In our particular subject, the questions set for the younger candidates were a marked improvement upon several we have seen in the past. The number of questions set was twelve, and of these nine had to be answered in three hours, leaving a candidate very little choice of questions or time for thought. Twenty minutes for each answer is barely time enough for candidates who are not accustomed to put their thoughts to paper, nor to write those thoughts—when they have them—with any degree of rapidity. On the other hand, the whole of the twelve questions set were of an eminently practical character, and capable of ready concise answers. Candidates who have not done well with such a paper, must consider that it is in their inability to write down what they know, rather than in their lack of information upon the subjects raised by the questions.

But what has been said of the Ordinary Grade questions, cannot be said of the Honours Grade. This set of questions is distinctly peculiar. To anyone who has studied the whole printing arts, the questions would not present serious difficulties, but to the lithographic printer—the man for whom the examination ought to be designed—they present too much extraneous matter. Questions 1, 2, 4 and 5 may be considered comparatively easy. Questions 3 and 9 present some doubtful difficulties. Questions 6 and 7 are very much beside the mark; they require the matter to be put in a clearer way. No. 8 is scarcely a printer's question, and Nos. 10, 11 and 12 are very far outside the scope of even the most advanced printer.

The injustice of such an arrangement is that whereas a printer can readily pass in the Ordinary Grade, it requires an artist to go in for the Honours Grade of lithographic printing, which seems somewhat anomalous!

It may be that the syllabus allows this far-reaching character in the questions, and perhaps the aim of technical instruction should be to place a man in possession of all the information in every branch of his trade. If that be so, then the questions are permissible; but still it seems that equally difficult and at the same time infinitely more practical questions could easily have been set, coming more closely within the realms of lithographic printing.

THE English advertiser lives in a paradise compared with the Italian or French. Every poster exhibited in France pays ten centimes duty, whilst the Italian who would advertise pays $\frac{1}{2}$ d. per day for each sheet. The government inspector is also the official bill-sticker, and each night goes round with a rake to tear down the bills he has stuck up during the day, so altogether the Italian advertiser has a trying time of it.



BY CHARLES HARRAP.

CHAPTER XIV. (continued).

TRANSFER PAPER RECIPES. ☺

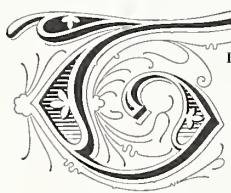


PLATE TRANSFER PAPER.

THE subject of plate transfer paper has been alluded to several times in the previous part of this chapter, under the transfer paper (T.P.) recipes I.—VII., and it needs but a very brief description here to

complete the remarks upon this subject. In chapter XIII. the materials—flour and plaster—used for the composition were fully described, and the exact treatment of them was given; and as nearly as possible T.P. Recipe II., with the description of the preparation of T.P. Recipe I., cover the ground of a copper-plate transfer paper, pure and simple. But the Scotch transfer paper, suitable for a plate transfer paper, has a composition of only the two ingredients, plaster of Paris and seconds flour, with water.

Plate T.P. Recipe XI.—

Plaster of Paris	... . . . .	½-lb.
Seconds flour	... . . . .	½-lb.
Water as required.		

As already described, the plaster has to be stirred with water until it has taken up all its water of crystallisation, and is rendered incapable of setting in a stony mass, by reason of the quantity of water which has been stirred in over and above its ordinary requirement for crystallisation. This operation necessitates careful attention and time. The half-pound of plaster should be put into a quart basin and water added whilst stirring vigorously. The average time for this preparation is half an hour.

The flour being a gelatinous or starchy body, will, if used ordinarily, form a jelly or paste. In preparing flour for this composition, it must be made into a thin cold-water paste. To this should be added a little more water. The thin paste is set to boil and kept well stirred. The surplus water will keep the paste liquid, and if it should thicken during the short boiling of five minutes, then more water must be added to just keep it thin.

The two pastes—plaster and flour—may be mixed together and well strained through a close-mesh sieve (No. 120), being forced through by the assistance of a

stiff hog-hair brush. When cold, the composition may be coated upon the paper either by a broad brush or sponge. The coating should be a thick one, and when dry a second coating may be put on. In coating the paper every effort should be made to keep the coating even. The evenness can be obtained afterwards by light rolling. This composition remains in a liquid condition a considerable time, and by the introduction of a few drops of carbolic acid (phenol), izal or salicylic acid, it can be preserved against decomposition. Several weeks after mixing it is untainted, and may be used without the least fear. If any disinfectant has been added, then the paste may remain fresh for months. Whilst standing the plaster and the flour settle to some extent, and before using must be well stirred to get an equal mixture of the ingredients. Plate transfer paper prepared in this manner may be used for chalk grained paper with success. It will take any variety of grain.

CHALK OR GRAINED TRANSFER PAPERS.

Although in preceding remarks this paper has already been partially treated and some idea of its qualifications given, yet it is better to have a few recipes which may be specially prepared for chalk paper. An old one is :—

Chalk T.P. Recipe XII.—

Stucco	... . . . .	2 tablespoonfuls.
Flour	... . . . .	1 tablespoonful.
Isinglass	... . . . .	1 oz.
Whites of	... . . . .	4 eggs.

In chapter XIII., and above, has been shewn the method of preparing whites of eggs and flour. The stucco, being to an extent old plaster of Paris, simply requires grinding down into a paste. The mixture must be made with the ingredients as cool as possible, to prevent the coagulation of the albumen. The whole mixture must be sieved well, and put on evenly and thickly. The coated paper must be rolled lightly to give it a perfectly even surface, after which any grain may be impressed from engraved plates or rollers, or grained stone or any fabric.

This recipe is decidedly old-fashioned, although it may suit the purpose very well. The use of the whites of the eggs seems to be a lame way of arriving at the result. As already stated, this albumen is soluble in cold water, therefore, the paper should be capable of being put down directly to cold wet stone. But its solubility also tends to cause the composition to dissolve when a wash of watery litho ink is put on. It is paper of this kind which, when slightly over-damped, goes so soft and smashes under pressure; the whole fault of it being in the presence of so much of the readily soluble material. A firmer paper, and one which also contains material soluble in cold water, is the following :—

Chalk T.P. Recipe XIII.—

Parchment clippings	... . . . .	4 oz.
Starch	... . . . .	4 oz.
Flake white	... . . . .	8 oz.

The starch is prepared as for laundry purposes (see T.P. Recipe III.) and kept warm. The parchment is rendered soluble as described under T.P. Recipe I., and the solution kept warm. The flake white is well ground in water, and to assist the mixture may be

made warm. The three ingredients are mixed gradually whilst warm, and the paper is also coated with the warm solution. The paper should be an ordinary stout under-sized printing paper. The coating operation is repeated on the first dry coating, and when quite dry the paper is rolled lightly to obtain an even surface before submitting it to the grained rollers, plates, stones, or fabrics, under heavy pressure to give it the necessary granulation.

Another recipe is one which is almost similar to the Scotch transfer or plate transfer paper (Plate T.P. Recipe XI.), excepting that it tends to increase the body by the introduction of white lead:—

Chalk T.P. Recipe XIV.—

Plaster of Paris	6-oz.
Seconds flour..	8-oz.
White lead	2-oz.

The preparation is similar to plate T.P. Recipe XI. The white lead is ground down in water and added in the ordinary way. The recipe is given simply as a sample of variations which may be made, but that is not to say with any material advantage. The white lead is very soft, and will take a very fine impression of the grain.

TRANSPARENT TRANSFER PAPER.

For various purposes it is necessary to have transparent transfer paper. For making copies of autographs and autograph circulars, a transparent transfer paper may be made with any of the ordinary warm stone transfer paper compositions upon a clear tracing paper. The tracing paper must be stout to resist the cockling of the paper when the damp composition is put on. For colour work, transparent transfer paper is of very great assistance in patching or shining up the transfers from the colour stones to the key impression. Such paper should have a wet stone composition upon it, or it may be simplified to a mere coating of starch paste, sufficiently thick to form a layer on the paper, impervious to the litho ink grease. The paper used may be thin foreign or bank post, stout tracing paper, letter copying paper, or varnished paper.

If there is any preference for the use of a warm stone transparent transfer paper, then a thin gelatine solution may be used upon varnished paper, or foreign or bank post. A paper may be made transparent by coating with a mixture of equal parts of terebine or turpentine, foreign or bank post being preferred.

IMPERISHABLE TRANSFER PAPER.

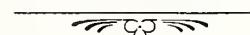
It has often been the desire of lithographers to obtain or make a transfer paper of such a nature that any work printed thereon will be as imperishable, at least, as it is on stone. Perhaps there has not been a paper—or rather a process—yet made which so nearly meets the requirements as the patent process of Bertling. The process has now been in use over six years, and the highest testimony is given of its success. In a recent issue of this journal (No. 15) a full-page illustration in eleven colours was printed from transfers which had been pulled nearly four years ago. The print is sufficiently good to justify the remark that the process has arrived at the highest state of perfection yet reached. In studying such a print, however, lithographers are apt to judge the character of the

production, rather than the means by which it was produced. Undoubtedly, work of a more artistic and telling character could have been produced by the same means. The work is perfect, and that is all the Bertling process aims at. The process consists of the following operations:—

1. Roll up the work with the patent transfer ink.
2. When the stone is dry, pull good transfers on the paper as supplied.
3. Dust the work with the imperishable powder, using at first a camel-hair brush, and finally dabbing the work all over with a soft pad of cotton wool. The surplus dust must be thoroughly removed.
4. Preserve all the sheets in a drawer, avoiding heavy pressure.
- In putting the transfers to stone again, it should be remembered that the imperishable powder is a fat.
5. Warm the stone.
6. Polish the face whilst warm, and wash thoroughly with warm water. Allow the stone to dry.
7. At the moment when the last appearance of damp has left the stone, place the transfer on and pull through in the ordinary way two or three times under good pressure.
8. Remove the paper. Wash the composition off, and finally dust with French chalk. Allow the stone to cool.
9. The cold stone is then slightly etched and rolled up.

The manufacture of this paper and process being a patent, it is impossible to deal with the matter in detail with any accuracy. Amongst the hard fats several could be mentioned, of the nature of stearine, which might serve the purpose of the imperishable powder. Such a fat used with a good preserving ink would in all probability give the same result.

[To be continued.]

 The Glasgow Lawsuit. 

BAIRD v. MILLAR & LANG.

HLTHOUGH this suit terminated in favour of the defendants, Messrs. Millar & Lang, yet it has cost them in money alone £150.

Looking at the lawsuit from the standpoint of a test which would have meant a serious drawback to many large printers had the plaintiff won, it must be conceded that Messrs. Millar & Lang were fighting the battle for all the employing printers in the kingdom. That being so, the employers may see their way to assist Messrs. Millar & Lang to bear the burden of the expenses. A very small contribution from each employing printer would clear the whole sum, and we are prepared to receive amounts forwarded for this purpose. The cause is good, and a hearty response will shew the appreciation of the trade for the firm which has fought their battle.

LITHOGRAPHERS interested in the future of the trade should note the subject given in our Prize Essay Competition, particulars of which will be found on another page.

Printing upon Sheet Metal.



THE printing and transferring of commercial work upon metal plates has become such an extensive industry at the present day, that a brief notice of the ways and means of execution will not be out of place. To study such printing fairly, consideration should be given to the character of the material upon which it is attempted to print the design. Thin tin

plates are quite as flexible as many cards, but as soon as the thickness of the metal causes a great degree of divergence between the flexibility of card and the plate, then comes the difficulty of printing direct upon the plate in the ordinary lithographic machine. The machines of the present day are not constructed for printing upon any but the thinnest plates.

The question of the elasticity and flexibility of the plate is one of first consideration. The second point is as to the surface of the plate. Lithographic printers are accustomed to the use of hard papers, steel-blue paper, dull enamel, bright enamel, tissue, and cardboard, and probably to celluloid and fabrics. But none of these present the hard, glassy face of bright polished tin. It is very seldom that in printing upon tin plate it is desirable to retain any part of the brilliancy of the plate.

As a rule the tin plate is entirely covered with a tint or varnish, and upon it the actual design is printed. If it be desirable to retain the original brilliancy of the tin, then means must be adopted, similar to printing upon celluloid, to secure the adherence of the ink. To accomplish this, each ink will require the admixture of a small quantity of paste to give it tenacity, and a small quantity of one of the printing pomades—Manders' or Trochard's—to assist the pigment in lying evenly upon the surface. The difficulties of the process will be found sufficiently great to tax the energies of the most enthusiastic.

The easier method—though ease can scarcely be said to apply at all to these methods—is to cover the tin with a varnish, enamel, or paint, to give it a surface upon which any pigment can be printed. A vast amount of the commoner printing upon tin is done by varnishing the plates with a pale shellac varnish, and thereby giving the tin a golden background for the work to appear upon. In other cases, which may also be classed as common work, the tin is painted over with an enamel, similar to Davis', Saunders', Holmes', McPherson's, or Aspinall's, and upon this smooth surface the work can be readily printed.

A similar grounding may be put upon the tin plate in the following manner:—Grind up white lead in a polishing varnish until of the consistency of a printing pigment. Then place it in an earthenware vessel, and, with a wooden palette knife, stir in turpentine until it becomes as thin as thin printing varnish. The mixture is then passed through muslin. The muslin may be spread in a sieve for convenience. The

muslin must be sufficiently fine to stop any grains of undissolved white lead. When the white lead is properly prepared by perhaps a second or third straining, it can be spread very evenly upon the plates with a flat, full bristle brush. At times it will be found necessary to add a little more turpentine to keep the white lead running evenly. This coating is then dried and hardened at 90° C. in an oven. When perfectly dry it is most probably of a yellow colour. The surface should be rubbed down absolutely smooth with pumice powder. After the first coat has been successfully applied, it is necessary to put on a coating of powdered flake white ground into colourless varnish and thinned with turpentine. This mixture must be strained as the former one, and can be applied in a similar way. In using this white coating, if it run "dry" or "mottled" add turpentine at once to assist the flow, and on no account dip the brush down into the vessel, so as to avoid any grains which may have fallen to the bottom. This coating must be prepared with a really good varnish, to avoid any fattiness making its appearance to destroy and wrinkle the subsequent picture. This coating is also dried in the drying oven, but not at a temperature exceeding 80° C., or the same yellow tone will occur as in the other coating.

When dry, these plates are treated with very fine pumice powder, rubbed on with a pad of old soft cloth, water being added to assist in the polishing. Finally, after washing thoroughly, the plates are rubbed vigorously with tale on a velvet pad. This makes the plates ready for the printing or transferring method.

[The coating of the plate in the first place with the "surfacing" may also be done with mixtures of paste, kaolin, sulphate of baryta, and white lead, or zinc oxide.]

If it is intended to print direct upon these prepared plates, then due precautions must be taken at the outset to use a very thin plate—a plate with sufficient elasticity to return to a flat surface before the next printing without pressure. The printing upon such plates may well be considered risky. The surface is certainly a good one, and almost as good as that of a dull enamel. But it contains an amount of varnish, and is itself white lead, so that extra care is necessary to assist the pigments in being absorbed and in securing their proper drying. Under these conditions it is necessary to use an amount of pomade to loosen the colours, and the drying must be assisted by a short exposure in an oven—bronze not being dried in an oven at all, but allowed to dry by exposure to air only. In this way any chromo-lithograph may be printed upon thin plate metal.

In the majority of cases such procedure is impossible, for the plates are too thick to pass round the litho machine cylinder. When that is the case, the preparation with white lead is performed as above, and the plates are then ready to receive the print by transfer. The transfer may be put on in either of two ways. The older—and probably most successful—way is by the use of indiarubber sheets, used in the office of transfer paper. In presswork, the rubber sheet with an impression upon it, taken from the stone, is passed through upon the prepared metal, and the impression is carried to the metal. Drying proceeds as before, and by a series of colours being transferred

to the plate in this manner the picture is built up. In use, the rubber sheet must be kept well talced to avoid the ink catching, or the impression from being lifted. It goes without saying that all work designed to be printed upon metal by this transfer method must be drawn the right way upon the stone, so as to appear reversed upon the rubber sheet. The rubber sheet may be made of muslin with a thin rubber layer. In machine work, the rubber sheet is formed into a roller which receives the impression from the stone and finally transfers it to the plate. The latter, of course, by this process, being allowed to run horizontally over the rubber roller to avoid curving it.

In rougher work, the rubber sheet may be replaced by the use of cardboard, previously well hardened in a solution of silicate of potash. This cardboard, which should be thin, receives a print from the stone, and is then well talced; upon this, again, the print is taken, until sufficient ink is upon it to secure a good transfer to the metal. The cardboard is then registered to the plate, and the ink transferred through the press to the plate. The talc which was put on the card will make itself apparent upon the plate, and when the ink is dry, must be gently rubbed off by the use of a very fine powder like rouge; very fine pumice or chalk would answer this purpose. Bronze takes about twenty-four hours to dry, and when dry it is talced. The other pigments dry in varying periods; and the use of a drying oven should be avoided, as certain colours are changed in hue by heat. A low temperature, however, will assist the drying without much injury, if any.

A more recent method of printing upon the metal plates, depends upon opening the surface of the plate to receive the pigments. To accomplish this the plates of metal should be submitted to a very fine sandblast, similar to that used for zinc plate preparing. Or it may be submitted to an acid bath, and receive therein a fine etch; after which it should be placed in an alkali bath to destroy all traces of acidity. Or it may be pumiced in the same way that stones are prepared for chalk work. In either case the surface of the plate is opened, and is far more amenable to the absorption of the pigments. In using such a metal for direct printing or transfer, the plate must be submitted to the drying oven between each colour to ensure the absorption of the pigment, before printing or transferring another pigment upon it—of course bronze is not dried in the oven—and the pigments should be treated with a little pomade to assist their evenness of printing.

The commoner classes of printing on tin can be done from stone in the machine or press, more readily if the work upon the stone is etched into low relief. By having the etching carried further to produce high relief, the tin plates can be embossed at the same time—producing intaglio and not relief plates.

We do not suppose we have done justice to the subject, but we have given every possible detail that can be given in a general way. It remains for the printer to detect, by actual work, how to get over a number of difficulties which he will have to contend with, and to his application and perseverance must be left the final perfection of his work in this most interesting branch of lithography.

In this connection, a marvellous new invention is being introduced to the trade. The invention consists of a method of preparing zinc whereby it may be printed on in one or many colours as readily as an impression can be taken on paper or cardboard. The utility of this process will be seen at a glance, for, while the material is not much more expensive than cardboard, its durability is unsurpassed. It will stand unlimited exposure to the weather, thereby rivalling the enamelled signs in such common use, and as the finest work can be done on it, the result is far superior to the rough effects of the baked enamelled signs. The parent company, the Metallocrome Printing Co., Ltd., of London, has had unprecedented success in introducing this process, and it is now used largely by leading firms to advertise their goods in stores, railway stations, etc.

Some beautiful specimens of zinc work done by this process have been on view, and there is no doubt that they were equal to the finest work on cardboard—in fact, superior in some respects; for the natural tint of the polished zinc, where it appeared, produced a very rich and brilliant effect. The work shown was of all classes, including fine letterpress and printings in thirteen and fourteen colours, amply demonstrating the adaptability of the process to all kinds of work.

The enamelled sign business has to some extent encroached on the field of the lithographer, but it will be the lithographer's fault if this continues, for this new process gives him an opportunity to compete on more than favourable terms, and also to do much work that has hitherto come to him, in a more substantial and hence satisfactory manner.

MEETING with some difficulty in an endeavour to obtain a reliable and intelligent description of the latest mechanical appliances adapted for printing on sheet metal, application was made to standard makers. There are obvious objections on the part of engineers, which will not allow of the publication of the latest and most valuable applications to these machines, and the following letter, from one of the best known makers, sufficiently indicates why the desired description could not be included.

Elland-road Works, Leeds, April 24th, 1894.
To the Editor of THE BRITISH LITHOGRAPHER.

SIR,—We should be glad to comply with your request by giving a description of our tin-plate printing machine, but are afraid that to do justice to the subject would somewhat conflict with the interests of several of our clients for whom we are making machinery of this kind—in fact, it is often a difficulty in new departures that there are obligations between the machinist and his customer, and this is our position at the present moment. We do not think that to give an imperfect, or merely outline, description would assist matters. Whilst we sincerely appreciate your kindness, we cannot do more at present than simply refer your readers to our ordinary advertisement in your esteemed journal, and which we may say sufficiently answers our requirements.

Yours faithfully,
G. MANN & CO.



Engravers and Engraving.



ENGRAVERS and printers everywhere will be interested in the speech of Professor Herkomer at the second annual dinner of the International Society of Wood Engravers, on April 27th last. It should be remembered that the professor is naturally, and it might be added, almost necessarily, in complete sympathy with his subject. He defines the mission of the society as "to try and save the beautiful art of wood engraving from the death that threatens it on all sides," the principal enemy being what he calls "the immorality of haste," which threatens to make men "exchange the art work for the mechanical process."

Wood engraving has a record in art of the very highest and most honourable nature. Artists in black and white owe much to the interpreters of their work, while the general public, from the highest to the lowliest, have been reached by and delighted with woodcuts. Upon the judgment of the public everything depends, but avoiding the customary depreciation of the public taste in matters of art, the professor emphatically claimed that the heart of the public was in the right place, and sooner or later a consensus of public opinion will stamp a work of art for all time. To this right-hearted public the society appeals against "the unwholesome change which is spreading like a microbe over the world of art illustrations." He described the change as an exchange of the art work for the mechanical process, and engravers who are taking up process work were "going over to the enemy," and are merely "weaker brethren."

As a compromise he urged those who control illustrated papers to use process work for the reproduction of line alone, leaving tone work to express the more complete work of the artist, which must be rendered again by an artist engraver. Properly denouncing the haste in engraving which made artists complain of the engravers spoiling their work, he advocated the acceptance of the mechanical means at hand for the reproduction of the artist's rapidly drawn line, because the raggedness that occurs in the line reproduced by process is far less injurious to the quality of the work than the straightened up and stiffened line which is so often seen in the engraver's facsimile work when he is pressed for time.

Photography is admonished, in all its varied applications to mechanics, to take its proper place, as a hand-maiden to art only, to assist where and when it can in that capacity. Nothing should interfere with the rights of the artist engraver, whose skilful hand alone can interpret the soul of the artist's work.

It is encouraging to hear renewed conviction that really good and great work will pay better in the end.

Despite all the "more haste and less speed" which is the fashion nowadays, Mr. Herkomer shows how much really admirable work is being done, and while he has openly and strongly denounced modern haste, at the same time the alternative hope and encouragement of his words enable one to believe that the sense of beauty, the love of the beautiful in art, is not dormant amongst the public.

At the same time, it is doubtful whether it was fair to so disparage one of the most useful arts the century has brought into existence. Any intention to retard its progress irresistibly reminds one of *Punch's* cartoon of Mrs. P. endeavouring to sweep back the waves of the Atlantic.

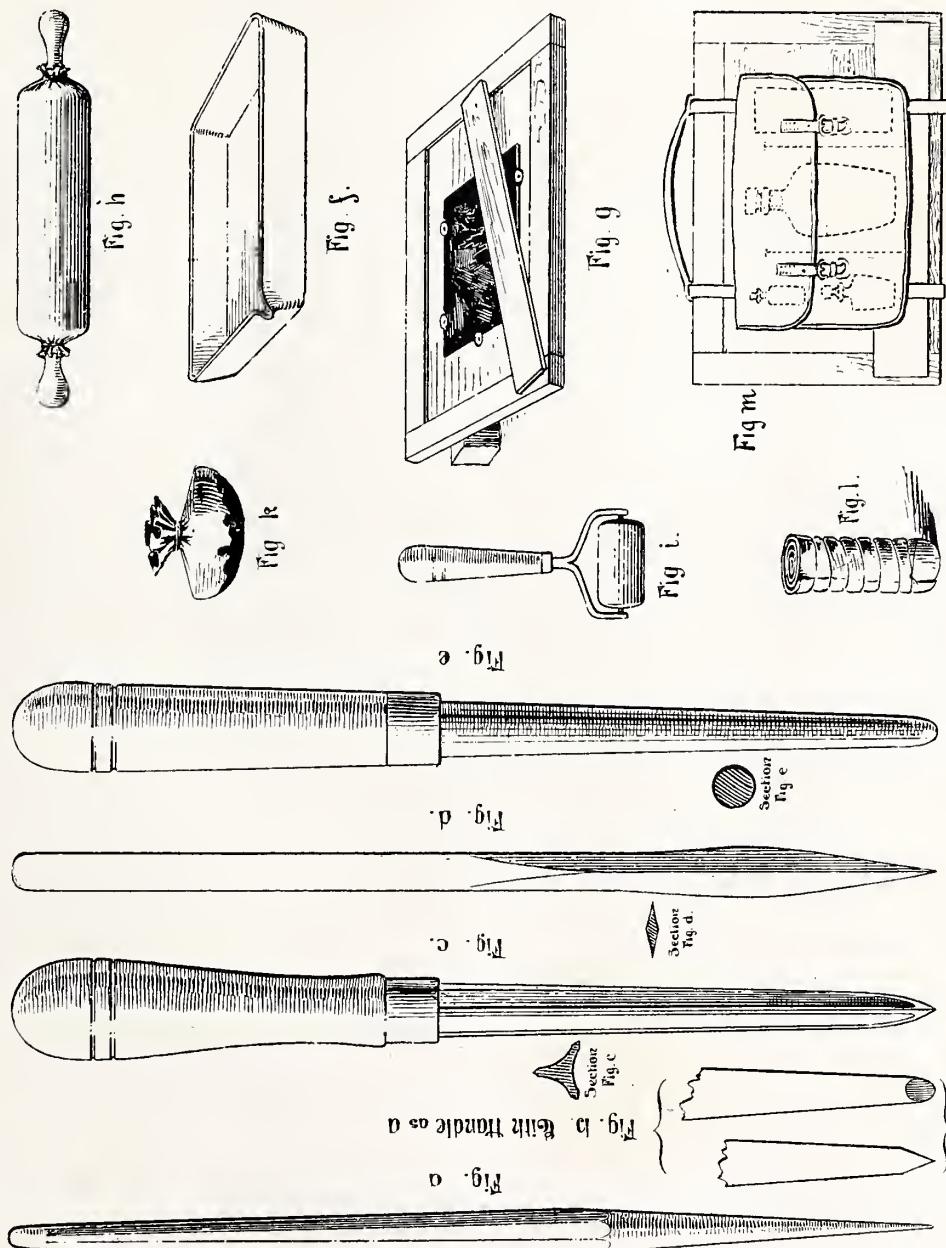
These remarks apply with more or less force to other phases of reproduction in the hands of litho and general artists, who will agree with the Professor in his genuine desire for really good work, while at the same time, allowance should fairly be made for the commercial spirit of the age and the peremptory and absorbing conditions governing latter-day modes of work.

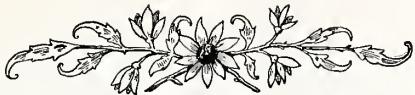
ONE occasionally meets with those who seem to regard half-tone engraving as a purely mechanical matter, entirely devoid of any artistic bearing, lamenting the results in contrast with the individual character which is given in wood engraving. Under the direction of the illustrators, and to gain the most artistic results from a half-tone plate, certain features of vignetting and rouletting are required which necessitate a complete artistic knowledge and skill, as in the case of the wood engraver. Gracefulness of outline, delicacy of lines, and proper colouring are all subject to the graver's tool.

UNLESS tool work, in zinc block process reproduction, more especially in the high lights, is done particularly well, it is apt to bear strong evidence of the tool. In cases where the high lights are lost in half-tone, it is necessary that some cutting away be done. Then comes the difficulty of too great softness in the lines, and too much rigidity in the outlines. This has caused much research for some more secure and rapid process, and we hear that at least one firm has given special prominence to its work by a photographic process in which the high lights and vignetting are secured at much less cost than skilled tool work.

IT is the exception now, rather than the rule, in any popular magazine to find an article illustrated throughout with rectangular half-tone plates. On the contrary, wash drawings and portraits are reproduced with vignetted effects closely approaching the original sketches, while even reproductions from ordinary photographs are ingeniously worked in combination with ornamental outlines to advantage.

PLATE I.





Etching, + Drypoint, + Mezzotint.

BY HUGH PATON,

Associate of the Royal Society of Painter-Etchers.

PART II. ■■■

THE GROUND.

THE essential qualities of a good ground are three-fold. First, of course, it should perfectly protect the copper from the acid; secondly, it should be soft enough to admit of the point cutting the line freely without any danger of its not getting through to the surface of the plate, a danger which is great

with the harder grounds; and thirdly, it should be hard enough and tenacious enough to resist the ebullition of the acid, and the necessary wear and tear attendant upon the execution of the work. If the ground be too hard, it is apt to chip up under the action of the point, and if it be too tenacious, the point is apt to remove only the smoked surface without getting down to the plate, though it appears to do so, with the consequence that the work is totally unbitten in places. On the other hand, the ground should not be too soft, for it is easily injured, or it gives way too easily under the action of the mordant, and sometimes it clings unpleasantly to the point of the needle. Theoretically, a simple coating of wax would be sufficient to resist the acid. I have known plates grounded with mutton fat, and such a ground acts well provided that it be not touched at all, and that a non-ebullient mordant, such as the Dutch, be used. But there is a certain amount of wear and tear inevitably attendant upon the execution of a plate from touches of the finger, drying with blotting paper after a biting, and so on, and it is well to be free from anxiety on the subject.

From what has been said with regard to the peculiarities of the Dutch and nitric mordants, it will be evident that some consideration must be had to these when preparing the ground. A ground that will perfectly stand the quiet, non-ebullient Dutch mordant is not necessarily strong enough to resist the ebullition of the nitric, and a ground that is perfectly suited to the nitric may be too tenacious for the Dutch. For it is desirable, as already indicated, that in both cases the line should widen, as well as deepen, with length of biting. Mr. Hamerton, who has experimented much with the making of grounds, considers that known as Bosse's the best for use in the Dutch mordant, and there can, I think, be no doubt that such is the case. It cuts with a peculiar cleanliness under the point, without clinging to it, and it resists well. The drawing is done with perfect ease and

sureness, without the special effort to cut a clean line which a hard ground requires. Here is the composition of it :—

BOSSE'S GROUND.

Pure white wax	... . . . .	5-oz.
Gum mastic	... . . . .	3-oz.
Bitumen (in powder)	... . . . .	1½-oz.

This ground is so absolutely perfect for the Dutch mordant that none better can be desired, but it has one weak point: it is not strong enough for the nitric mordant. In passages of close cross-shading, or at a point where several lines converge, the ebullition of the nitric is too much for it, and it gives way. Its other qualities, however, are so good that I have been experimenting lately (for your benefit, my reader, as well as my own) with the view of getting a ground as like this as possible, but strong enough to stand the nitric acid. Not one of the grounds usually recommended—and I have tried, as it happens, a good many—at all approaches Bosse's in the sweetness with which it cuts under the point, and the certainty with which the tool reaches the surface of the plate without effort. To preserve these qualities, I adhered mainly to the materials and proportions given for Bosse's ground, but, in order to increase the clinging quality, I substituted half the mastic with Burgundy pitch, which is peculiarly tenacious. I tried this ground first on a small plate in which I indulged in some very close cross-shading, and submitted it to a fairly severe biting. I have since tried it upon a couple of plates which I purposely bit rather sharply, one of them almost violently. The result is a complete success—it resists perfectly. At the same time it cuts without effort, and works with perfect sweetness under the needle. Every line is clearly bitten, shewing that the ground has been perfectly cut through, and the plates are peculiarly free from that unevenness of biting which characterises work done on hard grounds. There is no sign of the ground having given way anywhere, even in the closest work. Simplifying the proportions slightly, the figures are as follow:—

A NITRIC GROUND (Bosse's modified).

Pure white wax	... . . . .	3
Gum mastic	... . . . .	1
Burgundy pitch	... . . . .	1
Bitumen (in powder)	... . . . .	1

These quantities in ounces will give enough to last for years, and some to give away to your friends as well.

MAKING THE GROUND.

The real difficulty in making the ground consists in the fact that the bitumen melts at a much higher temperature than the other ingredients. This leads to the danger, either of burning the mixture, or of fusing it insufficiently. It is important that the materials be thoroughly incorporated. Make in the ordinary double glue kettle sold by any ironmonger, or an ordinary jam pot placed in a larger iron pot will do as well. Use the ring Bunsen burner, with which you warm the heater (I shall describe these presently). Mr. Hamerton's method of putting water in the outer pot and making over a slow fire, I have not found satisfactory; the water does not give heat enough over the Bunsen, and it is desirable to use a Bunsen,

because the heat can be better regulated. Therefore put *sand* in the outer pot, sufficient to cover the inner one to half or two-thirds its height when bedded in it. This gives a much greater heat and leaves ample in reserve. Heat the sand-bath, with the Bunsen turned less than half up, until the wax melts, then add the mastic and the pitch, a little at a time. If the mastic remain in a half-melted, sticky lump, the heat is insufficient, and must be increased gradually. But if it melt after remaining in the sticky stage for half a minute, the heat is sufficient. If it melt *immediately*, the heat is too great. Then add the bitumen, which must have been ready ground into fine powder, a little at a time, stirring with a rod sufficiently long to avoid risk of burning the fingers. The heat should be increased at this point, but gradually. The mixture, which is now a black liquid rather stiffer than cream, should *flow* quietly when left to itself for a minute: *it should not boil*. Beware of it boiling up, which it is apt to do suddenly, and run over. If it reach that stage the ground is spoiled, and there is besides danger of a conflagration. Keep it at the "flow" point for an hour, but two hours are better, stirring frequently. At this point it gives off a slight pungent smoke, which is disagreeable, so see that the studio door is shut and the window wide open!

It is not necessary, as usually recommended, to scrape down the wax and crush the mastic and pitch. These may be put into the pot in the lump, a bit at a time. The bitumen, however, should be pounded with a flat-iron into a fine powder. Pounding in a mortar is not very satisfactory; the friction makes it sticky.

When the mixture is thoroughly homogeneous, pour it into a basin of warm water. The mass partially congeals at once, and may then be rolled into balls or sticks of convenient size between the palms. A few balls the size of a walnut should be made, and the remainder rolled into sticks the thickness of a lead pencil and of any convenient length. The former are wanted to reground the plate for adding work; the latter are more convenient for breaking up into pieces. Put away in a glass jar, corked, and do not forget to label it with particulars of the composition, in case you desire to modify them in any way next time. Keep in a cool, dry place, and it is good for years.

To test the ground, break a stick when it is quite cold. When right, it breaks with a slight spring and a clear snap. It is smooth and bright in the breakage, like a piece of good coal: outside it is slightly duller. If slightly reddish or *rusty* in the break, it is burned, and may be thrown away at once as useless. It may be tested further by warming the corner of a plate until the ground melts, but do not let the plate get *hot*. Rub a little on the plate, smooth with the dabber or the ball of the thumb, smoke, and when quite cold try with the needle and a little strong acid. If it chip under the needle it is too hard (bitumen); if it cling unpleasantly to the point it is too tenacious (pitch); if it give way under the acid it is too soft (wax); and the ingredients indicated must be reduced accordingly. But the proportions given will be found nearly right; they may be modified a little, as experience or the temperament of the individual dictates.

THE LIQUID GROUND.

For general use, the liquid form of ground will be found by far the best. Break into small pieces enough of the stick to make the bulk of a pigeon's egg, and put into an ordinary six ounce bottle. This will give enough to last for a good while, for ordinary sizes of plates at any rate. Fill up with the best quality of methylated ether (sp. gr. .720), shake vigorously several times a day for several days, and allow to settle for a day or two. The result is a clear red liquid, like port wine, with a sediment below. Pour off the clear liquid into a clean bottle, and allow to settle again for a week. Any slight sediment again resulting may be thrown away, and the clear liquid is ready for use. Apply to the plate as instructed in an early chapter. (See paragraph in No. 8, entitled "Preparation of the Plate.")

Pure ether is sometimes recommended, but the expense is unnecessary. The best quality of methylated ether I have found free from impurity; lower qualities are apt to have a proportion of water in them, the result being spots on the grounded plate, which shell off at once under the acid.

Chloroform, the best methylated also, has some advantages over ether, and some may prefer it. It dissolves the ground rapidly, and a supply may be made in an hour or two. The sp. gr. is nearly double that of ether, and the ground floats on the surface. Dissolve as much as the chloroform will take up without shewing any waxy film on the surface, or on the side of the bottle. Chloroform has one disadvantage, however, it does not evaporate so quickly as the ether. On the other hand, the ether has one weakness, in that it does not always take up quite enough of the ground, the resulting liquid being too thin. But I prefer the ether on the whole, and have generally succeeded in rectifying this by putting in a fresh supply of ground, and treating as before. To be right, the liquid should be almost, if not quite, as dark as port wine. The liquid made with chloroform is rather thicker; the cost is about double, owing to the greater sp. gr.

If the ground become foul with dust, which shews in little specks when it is poured upon the plate, pour it backwards and forwards a few times between two bottles through a glass funnel, into which you have put a small piece of fine sponge. The clear solution, as just described, should be of the right degree of fluidity, but if at any time it becomes rather thick, a little of the ether may be added. Keep it always in a *corked* bottle; a glass stopper is apt to stick, and is difficult to remove.

THE PASTE GROUND.

To make paste ground for use with the roller, melt a couple of balls (over a low heat to avoid burning them), and add sufficient oil of lavender to leave it, when cool, of the consistency of honey in winter. About once and a half to twice the bulk of the ground will be sufficient of the spike oil. Place in a wide-mouthed glass jar, and keep well corked. A cork is better than a glass stopper; the latter is apt to stick. A little of the oil placed on the top before corking will keep it from getting too dry and

stiff. (For the method of applying the paste ground, see paragraph entitled "Re-biting," in No. 10.)

STOPPING-OUT VARNISH.

For stopping out portions of work that are sufficiently bitten, or for the edges and back of the plate if you wish to put it in the bath, ordinary Japan black thinned down with turpentine will do very well. It requires a little time to dry. Mr. Herkomer recommends a simple solution of shellac in alcohol. It dries immediately, which is often a great convenience, and I am told that it is very pleasant to work with.

But a much more important thing is a stopping-out varnish that will dry immediately, and which can be worked over afterwards with the needle. This is indispensable to allow of correcting errors in drawing, and of erasing any wrong lines before biting. Mr. Hamerton solved the problem by making a saturated solution of white wax in ether, and adding to this about one-sixth its volume of Japan varnish. I find that the same result is arrived at more simply by putting the small quantity of Japan black into a bottle, and filling up with the ordinary liquid ground. Shake well, and it is ready for use at once. For this purpose the ground made with ether is far superior, as it dries at once, while the chloroform ground requires a little time. Use a small camel-hair brush, and touch over lightly with the point of the brush any of the work requiring to be erased. Use it lightly and cleanly, for the ether is apt to disturb the original ground. This varnish dries immediately, and can be worked over again with the needle. The only objection to it is that it is not very strong under the acid; but if lightly used for the erasure of single lines, such as errors in the first drawing, it will be found fairly satisfactory. It is the best, as far as I know, that is available for the purpose, and it is satisfactory, unless used to stop out *masses* of needle work. Then it is too weak; in such cases the stronger varnish should be used, and the work added to the plate afterwards.

This varnish should be used, as far as possible, soon after being applied. If allowed to remain more than a few days, it becomes hard and brittle, and cracks off under the acid.

THE PLATE.—COPPER.

The metal used is commonly copper, and it is the metal most to be recommended. It is soft and fine grained as metals go, and it works sweetly. It has also the very great advantage of not being liable to rust, and is easily kept in good condition. In the old days the etcher had his coppers specially prepared, indeed, he very often prepared them himself; but in these days the labour would seem to be unnecessary. Good plates, as prepared for engraving purposes, can be obtained through the artists' colourmen, and plates grounded, smoked, and ready for working upon, from Mr. Rhind (see list of materials in No. 8). What is essential about the plate is that it should have been well hammered before being polished, so that the grain is fine and even. This secures that the acid acts equally all over it.

It is advisable to order the plates of the size required, as it saves trouble, but there need be no difficulty in cutting them when desired. Rule a line

on the plate with an old needle, or any point that will scratch, and lay it upon a steel anvil. Do not lay it upon the work table or any wooden surface, or the result will be a warped plate that is exceedingly difficult to put right again. It must be laid upon a steel surface. Then cut along the line with a cold steel chisel and a hammer, giving a fairly smart blow at each stroke. Hold the chisel firmly down upon the plate, or it will jump and leave a mark that will show near the edge of your proof. Once along the line, or twice if the plate be a thick one, will half cut the copper through, and it may then be easily bent off. The edges are smoothed and polished with a couple of files, one moderately coarse and one fine, and then a rubbing with the shank of the burnisher. The same means may be used to bevel the edges of the plate. Plates, especially of the thicker kind, should be ordered with bevelled edges, or bevelled with file and burnisher, otherwise the edge is apt to cut the paper when taking the proof, and so the margin is spoiled. Plates of the thinner kind, like the ordinary small card plate, do not usually require this.

The cost of copper plates is about 3/6 per lb.; small plates rather more in proportion. A thin plate, 7 x 10-in., weighs about a pound. It is a good plan to order a sheet of copper at a time. It measures 16 x 24-in., and you can have it cut in a variety of sizes to suit probable requirements. One is then sure of having a plate ready for almost any kind of subject. I get my plates from Mr. Robinson, Manchester (see No. 8), a sheet at a time, cut as required, and find the cost considerably less. He hammers them himself, and I find that I can depend on them.

Spoiled copper, of which every etcher accumulates a pile, the monument of the mistakes by which he gains experience, should be kept and re-planed. The cost of doing this is about half the original cost of the copper. Anything under about 5 x 7-in. should not, however, be sent out, as the cost of polishing small plates is greater in proportion, and it is better to order new ones at once. The small plates may be kept, however, because they are useful for occasional experiments—testing ground, etc.

STEEL-FACING.

For the purposes of an edition, copper plates can be steel-faced, so finely it is said that there is no perceptible difference in the proof of the faintest line. Some etchers have an objection to the steel-faced plate, thinking the proof harder than that from the pure copper, and there is perhaps room for the objection. But when an edition is required, numbering perhaps hundreds or even thousands of proofs, it would seem to be necessary. The pure copper will only give a limited edition of from fifty to a hundred good proofs, the number varying somewhat, perhaps owing to varying density of different plates, and perhaps also to the nature of the work upon the plate and the method required to be followed in printing it. On the other hand, the steel-facing can be renewed as required, so that an endless edition is possible with proper care.

ZINC AND STEEL.

Zinc is sometimes used for the purposes of the etcher, but on the whole it is not to be recommended.

It is a coarser metal than copper, and the acid bites a rougher line. It is very suitable in this respect for landscape work; it is richer in a certain way than the line bitten in copper. This metal is also considerably cheaper than copper, about one-third the price. It has, however, one very serious objection: it is easily destroyed by rust. It can only be preserved by being carefully covered with wax or etching ground, and even then the edges are open to attack; one never knows that the plate is safe. I am the fortunate owner of a very fine proof from a zinc plate which was completely destroyed in this way. The proof, of course, is all the more valuable; but there speaks the *connoisseur*, not the *amateur*. To the etcher the loss of the plate was serious, for no etcher executes a plate, into which he puts some of his best, without learning to love it.

Zinc cannot be steel-plated—another serious objection when an edition is required. It can be copper-plated first, however, and then steel-plated. I have never had this done, and cannot speak from experience, but one would think that the double plating would be destructive of quality in the finer work on the plate. On the whole zinc plates are to be avoided.

Steel is likewise objectionable, on the score of rust. Besides, it is a very hard metal, and unsympathetic. It prints a hard dry line, for which the etcher, as distinct from the engraver, has no affinity. In addition to that, the modern method of steel-facing a copper has obviated all necessity of working direct upon a metal that will stand the wear and tear of an edition.

CARE OF THE PLATES.

It is worth while taking care of your plates, but a little attention is all that is required when they are of copper. After printing, clean well with turpentine and a soft rag, back and front, and put away in an envelope of thick brown paper. A spoiled proof, or a portion of one sufficient to enable you to identify the plate, may be pasted on the envelope. After this, if the plates are kept in a dry place, they need give you no further concern. On the other hand, with steel or zinc plates there is always cause for anxiety, as it is not always possible to avoid a little damp, and a very little will attack these metals when it will not affect copper.

Before putting the plates away, be careful to see that the ink is thoroughly cleaned out of the lines. Sprinkle the turpentine on the plate and rub all over with the finger, then let it soak for a few seconds before cleaning it off with the rag. Neglect of this will result in the ink drying hard in the lines, and it is then exceedingly difficult to remove. In a few weeks it becomes so hard that it can only be removed by treating with a very strong solution of soda (red American potash is good for the purpose). If the plates have been lying for a year or two, or even some months, it may be necessary to boil them in the soda before the ink can be got rid of. But in ordinary cases it will suffice to soak the plate for a short time in the solution (cold), and then rub into the lines with an old tooth brush. A little ordinary care, however, in cleaning properly after printing, will obviate all danger of this.

I am indebted to a friend for the plate which accompanies this number, showing tools and other paraphernalia. I shall describe these in the next number. It has not been convenient to draw them all on one scale, but the tools are nearly life size (my needles measure barely six inches), and the dimensions of the others will be given in the text.

[To be continued.]



Aluminium versus Litho Stone.

TIT is claimed that in aluminium a perfect substitute for the lithographic stone has been found, this wonderful metal having far greater adaptability to the purpose than zinc, upon which there has been so much experimental work. The chief advantage of aluminium over zinc lies in its porosity and its peculiar power of absorbing and retaining transferred impressions, which it possesses in as marked a degree as the lithographic stone. As compared with the latter its main advantage—and this is an enormous one—is its lightness, one hundred sheets of aluminium, ready for the press, weighing considerably less than one stone of the same surface dimensions. Sheet aluminium is now selling at four shillings and twopence per pound, and a sheet thirty by forty inches, and the fortieth of an inch in thickness, would weigh three pounds, thus costing twelve and sixpence, while a good stone of the same size would cost £20.

There are other advantages possessed by aluminium, one of which is that, being made from clay, the supply is practicably inexhaustible, while in consequence of the increased demand for lithographic stone, the best quality is becoming scarce.

There is also a great gain in the cost of storage, as one ton of aluminium will perform the work of two hundred tons of stone; but the greatest gain will be in the saving of interest. If a lithographic establishment has to carry the amount of stone mentioned, the interest at six per cent on the capital invested will amount to £720 a year, while on aluminium sheets and necessary mounting blocks the interest would amount to but £48.

HERE is a formula given to writers and artists who may wish to perpetuate verses or designs on glass and do not possess the apparently necessary diamond. An ink to serve the same purpose may be made as follows:—

White gum lac	10 parts.
Venice turpentine	5 "
Rectified turpentine	15 "

Heat over a hot water bath. When the solution is complete, add five parts lampblack.

AMONG the exhibitions, that of the Painter-Etchers, at Pall Mall, has many attractions. The chief interest centres around Mr. Herkomer's "Serpentine Dancer," and Monsieur M. P. Hellen's vivacious though graceful etchings, while lovers of monochrome find much which appeals strongly to their tastes.



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Trade Exclusiveness.

HENRY WOLFF, in "The Country of the Vosges," says that the people of the little village of Rufach have a very common-sense notion of keeping their own good things entirely to themselves—even such as elsewhere one would prefer to see used by one's neighbours. Thus, for instance, when they had set up a brand-new gallows of good seasoned oak on one of the finest hilltops in the neighbourhood, as is the custom in Germany, and an adjoining parish begged to be allowed to hang one of its malefactors upon it, it is on record that the Rufachers indignantly denied them, protesting, "This gallows is for ourselves only and for our children."

Though this story is "laid in Germany" its moral is pretty obvious when applied to the action of many lithographers and kindred workers. As we are all so vitally interested in retaining trade in the country, let us not shortsightedly endeavour to keep all the good things in the way of new ideas and paying developments entirely to our individual selves, but allow them to become current in the trade at large, so that they may be open to other and wider influences, and eventually increase and develop according to their genuine value, to the ultimate benefit of the community.

We may be told that this sentiment is all very well proceeding from a trade journal which disseminates such information amongst readers, but the most conservative amongst us must admit that the days of utterly selfish exclusiveness are gone "unwept, unhonoured, and unsung," and we must urge that those who may be gifted with the inventive spirit or the energy of practical application, cannot—both for their own sakes, and for that of their confrères—allow whatever developments and improvements they may be enabled to produce to be bounded and confined by their own fancy's exclusiveness, and merely utilised in their embryo form, maybe to facilitate some little personal fad or some individual mode of working.

We often plead for a wider and freer spirit of exchange, and a mutual impartive and receptive tone amongst the followers of our art. It is only too human and too easy to be selfish, but the practical adaptation of the maxim "not for self, but for all," is in the end better for the self, than the self in its shortsightedness may conceive.

Feeling strongly on this point, we may be expected (as we fully intend) to continue to harp on this string, and to peg constantly away at removing the exclusive mantle of self which too apparently wraps and enshrouds some branches of the trade. More of the *genuine* healthy English spirit of enterprise, mutual and helpful competition, should be infused into our workers. Why cannot we all see that what is to the benefit of the community in the development of new ideas, the provision of side branches of the industry, and facility for production of existing work, must also be to the ultimate advantage of each of its units—the individuals who make up the whole?

Being profound disbelievers in the cheaply philanthropic, which professes with much unction to do all for others, but ever has its own axe to grind, we look askance at movements of profession; but, and now in

a trade journal sense, we must insist that self and self interest are also included as an integral part of true assistance to others.

We hope to have every assistance in the future from those who think with us—and they are an increasing number we are glad to say. Between the lines of what we have written, our endeavour may be read by those having the interests of the trade at heart, and who are willing to read.

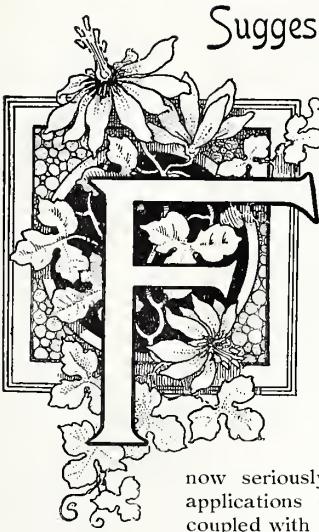


French Chromo Almanacs.

TRADE reports shew that the sale of *calendriers* in France has again been very large, and, for the season, remunerative. This success must be ascribed to the care and taste displayed in the selection of subjects and the ability displayed in the production of the prints. Even more so than amongst representative British houses, the French commercial house of any standing almost invariably has its own specially designed calendar to present to its customers. The publishers are thus maintained on the *qui vive*, for in the originality and tastefulness of their specimens lies the secret either of an enormous sale or a mortifying failure. They must hit the public taste and make every endeavour to adapt their productions to its fickle demands. As a rule the customer will not give an order for a mere sketch or outline of the almanac, but must see it completed before finally making a decision. When the order has been placed, the first step is the selection of the illustration for the heading of the card, and this is perhaps the most important point. Prominent artists, frequently famous men, supply the coloured sketches, but their names are never allowed to be appended, the almanac sketches being probably considered as mere "pot-boilers." Then the chromoist has to dissect the whole and piece it for the stone, while designing each in colour and each shade, and every one of which must pass over its distinct tint, so that, as we know, the completed cards are relatively dear. The cylinder colour machine cannot, as a rule, be relied on for fine first-class work which can be trusted to remain before the public eye twelve months. After the printing comes the pasting of the picture on the card, and the varnishing and the insertion of the suspending ribbon or cord. The last season's demand ran mostly in favour of humorous designs and tear-off calendars, in the latter of which Spanish designs predominated. Evidently the annual chromo almanac is as much an institution in France as in Great Britain, and is catered for in much the same fashion.

ONLY too truly do we nowadays realise the force of Solomon's dictum of the "little foxes that spoil the vines." Printers have their foxes which kill all the profits of the business unless watched and checked. The possession of the finest plant and material and the highest skill and practical application in their business avail nothing, and unless they look after the little details connected with the execution of the work they may make loss instead of profit.

Suggestions regarding Chalk and Similar Transfers.



ROM a series of articles appearing in the *Intermediaire* we translate a description of practical work with delicate transfers, as suggestive to printers dealing with transfers from various—and more especially recent—methods of reproduction.

Even the highest classes of lithography, no less than the finest tool engraving, are now seriously attacked by the various applications of photographic processes, coupled with the ever-increasing attention paid to methods of rapid printing. At the same time, industrial art and commerce still delegates a large proportion of its work to lithographic methods—such work as, from its nature, cannot be undertaken by its sister art, typography.

One may be fairly warranted in saying that lithography produced beautiful work from its very inception; but is it not otherwise with the typographical art, which has only attained satisfactory results by repeated developments rendered necessary by the increasing demands made upon it, the demand being supplied by ingenious and thoughtful improvements, and by the most careful and painstaking application?

It is precisely a process requiring this application that we here desire to consider; it affects even the most delicate transfers, and though in reality but a simple process, is capable of valuable service.

Amongst colour printing methods, chromo-lithography has the advantage of being originally produced by the artist's brush and pencil. There is a rapidity of execution in colours by the chromoist and frequently a saving in colours. But the transfers from chalk paper are dreaded by the printer whenever it is necessary to obtain them for important work, though, as a rule, a beautiful artistic lithograph always remains as such, and unless accident interferes, may always be successfully produced.

We will speak more particularly of present-day work as more interesting and delicate than older processes, and thus mention designs on stone, litho work on grained paper, similigravure in grains, in lines, on zinc or on copper, wash drawings, collotype, where it may be advantageous or necessary to obtain transfers from these various methods.

We are aware that chalk paper transfers have always formed a difficulty which is seldom successfully overcome by even the cleverest and most experienced printers. Further, even with a good transfer the printing is rarely satisfactory.

From the first, two points necessitate special attention—the transfer ink and the condition of the stone on which the transfer is to be made. On these two

considerations the success or otherwise of the production will result. The secondary details may be relegated to later discussion.

Two processes are generally employed. The first consists in making a transfer on polished stone. In this case, the chalk work being perfect and clean, the laying-down, gumming, inking, and preparation well executed, then all is well. But, on the one hand, chalk work on polished stone possesses extremely fine grains, and again in the black there are often equally fine strokes. This is where the difficulty of the printer comes in—to keep the fine lines and delicate lights on a polished stone, for in spite of his care, and probably due to the absence of grain, it usually occurs that the fineness disappears and the heavier portions thicken. The difficulty is an obvious one, and may almost be considered as insurmountable, as, in fact, it is amongst printers. Thus, this method is not used for the work under consideration. The other process consists of making the transfer on grained stone, and this is the method most usually employed. The results are preferable to those from the former method, but it has the defect of rendering chalk work lighter than is desirable, this being the result of the grain of the original not coinciding with those of the transfer stone, or probably from their entire absence.

There are thus two processes before us alike possessing undoubted good qualities and inherent defects. The good quality of the first is that it receives entirely all the work on the polished stone, but the pulls from it cannot be made without fear of thickening, or the entire disappearance of light tones. The second process allows of a more regular printing, but the middle tones, and particularly the light tones, are easily removed.

Thus, a comparison of the two methods deduces the conclusion that a stone is required in an intermediary state, *neither grained nor polished*, but having a microscopic chemical grain. This has been tried, and, although extremely fine, the grain produced holds the design well. It has been used with much success by various printers, therefore further particulars may prove interesting.

At first, it is conceded that unsized paper proves best for the production of a good proof, more particularly of chalk or similar work. The reason for this is, that the varnish of the ink is immediately absorbed into the paper, then the ink being compact and firm will not remove or bruise as on sized paper, which is non-absorbent, and the black on which smashes more or less under pressure.

Then, if we are able to put the stone in this same absorbent state, there will be the advantage of not thickening the image, and at the same time, by its spongy condition, the stone will absorb sufficient ink to give solidity to the transfer. This may be obtained by carefully proceeding with the following operation, which takes longer to explain than to carry out, requires but little attention, and necessitates little expenditure of time:—

Take a perfectly polished stone of good quality; scratched or otherwise marked stones are of no value, only tending to produce an irregular or thickened grain. Make a solution of pyrolignous acid in twice

the amount of water, or better still, weak vinegar; put one of these solutions on the stone and leave a few seconds—just sufficient to de-polish only. The longer it is left in contact the deeper the grain, which also depends on the proportion of acid used. It is also possible, in the same manner, to vary the degree of fineness. But the delicate point, which is not however a difficult matter, is to have the stone *perfectly etched*, dead and dull. Then wash immediately, preferably under a tap, rubbing the surface of the stone with a soft sponge, wadding, fine linen, or a badger hair brush, until the water used loses its milky white appearance. This detail is a very important one, easy to observe, and should be insisted upon, or there is soon formed a light precipitate of free chalk, which, resting on the stone, ultimately endangers the adherence of the transfer. Still further, so as to be certain there is no trace of acid remaining, which would destroy the transfer, treat the stone with ammonia water, which will take up all the traces of acid, using water with only 5% alkali. The operation concludes by a washing and the stone is left to dry as usual.

As a matter of fact, it is a light de-preparation applied in the most delicate and careful manner. In this condition the stone is particularly well prepared to receive the finest and most delicate transfers, and after the usual procedure the rest of the work is carried out in the ordinary manner.

Again, the quality of the transfer ink is of the greatest importance, as all those in general use do not fulfil the necessary conditions for obtaining the best results. Each has his own particular choice, and the apparent tone of even the best coloured ink does not necessarily indicate that it is of a perfect quality—the contrary is often the case. The first necessary qualities are: the ink should be non-liquid, greasy, somewhat pitchy, so as to be adhesive, and lastly very homogeneous. It should partake of the character of a light coating, continuous yet non-porous, and should not be liable to lift under pressure. Materials which, when mixed, fulfil these conditions should not be overlooked. For example: Norway tar, black pitch, Canadian balsam or resin oil, either singly or mixed with bitumen of Judea dissolved hot in oil, are all very homogeneous, and being mixed, either in weak quantities or added while hot to the ordinary transfer ink of commerce, give very good results. This allows of the work being rolled up with a very thin layer of ink, but at the same time properly greasy and adhesive, and thus avoiding any thickening which might afterwards tend to damage the clearness of the work. Light oils, fluids, and the granular fats should not be employed.

It is advisable to insist on another point. In putting down a transfer, in no matter what case, it is unnecessary to use heavy pressure, particularly when dealing with the fine work under consideration.

Now, what is necessary in a transfer? Perfect adherence of the image on the stone; first obtained by the quality of the ink and by average pressure repeated with plenty of backing. Then perfect adherence is obtained without any risk of after bruising.

The above complete procedure is by no means costly, and is rapid and perfectly applicable in all cases. It is easy to experiment with it for chalk work as well as for engraving, collotype, etc. So short an actual operation has perhaps taken a somewhat long explanation, but we all know too well that a simple formula given without demonstration is usually insufficient, besides which there is the chance of omitting minute yet extremely important accessory details. The process is a thoroughly practical one, and commends itself for consideration.

Poster Collectors.

THE attention paid to the artistic development of the advertising poster is fast making it a veritable work of art, and apart from its advertising value and the pleasure a well-drawn sketch affords the general public, we learn that the collecting craze is already seizing upon the up-to-date pictorial poster as new ground for exploitation. In the States, so many requests have been received for the series of monthly coloured posters of *Harper's Magazine*, that no more sets are now obtainable. In Paris, Jules Chéret's coloured cartoons, advertising the efficacy of hair restorers, the infallibility of a new pill, the charms of a popular singer, or what not, are already at a premium amongst collectors, the rarer sorts fetching prices varying from 10/- to £5.

Think of that, ye poster-artists! The mural effects on which your fame rests are not to be henceforth of the merely ephemeral prosaic character—subject to the wind that blows, the rain that falls, and the mud that is thrown: your efforts may be daintily preserved long after their normal life and mission is run. Your productions are to live on, and in company with the smaller—and now insignificant—specimens of work, will be handed down to succeeding generations either as specimens of ancient, though progressive, art, or possibly to point some other lesson. Whether they will be received with commiseration, with indulgent pity, or painful shudders, remains to be told—the public becomes every day more critical.

Seriously speaking, though, there are multitudes of far less sensible fads now in vogue than the collection of artistic posters, and it is more than a pity that some of our magnificent poster cartoons should necessarily be so evanescent and short-lived.

We understand the collecting mania is somewhat rife in our own country, but as yet has not reached any acute stage.

AN improvement in means of producing photomechanical printing surfaces by Dr. Vogel, of Charlottenburg, Berlin, consists in the use of a line plate in taking photographic negatives for colour printing in half-tone (auto-copy) and which is not turned for one and the same negative, as in the Meisenbach and Albert processes, but is only turned for each of the several consecutive negatives prepared for different colours, so that each negative has only one line system, and not the autotypical net or reticulation hitherto customary.

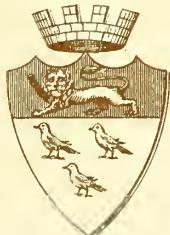
The Arms of the Boroughs & Towns of Great Britain.
Containing various points of note for the artist on the ART of BLAZON.

Birkenhead. C.B.



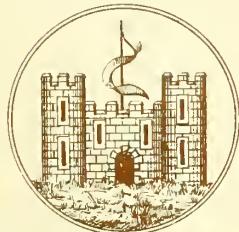
Cheshire. 99.184.

Canterbury. C.B.



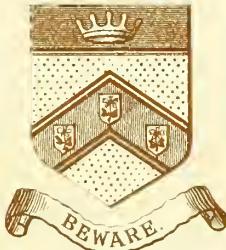
Kent. 23.026.

Castleford. U.S.



Yorkshire. 14.143.

Chorley. M.B.



Lancashire. 23.082.

Bolton. C.B.



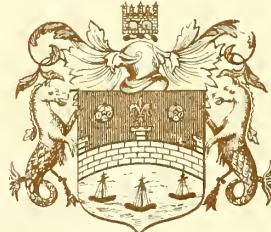
Lancashire. 115.002.

Bury St. Edmunds. M.B.



Suffolk. 16.630.

Cambridge. M.B.



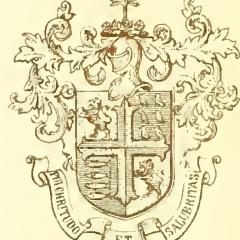
Cambridgeshire. 36.983.

Deal. M.B.



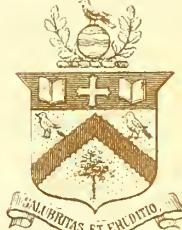
Kent. 8.898.

Bournemouth. M.B.



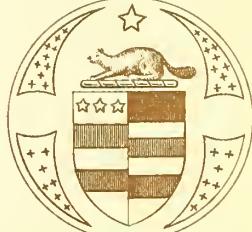
Hampshire. 37.650.

Cheltenham. M.B.



Gloucestershire. 42.914.

Denton & Haughton. U.S.

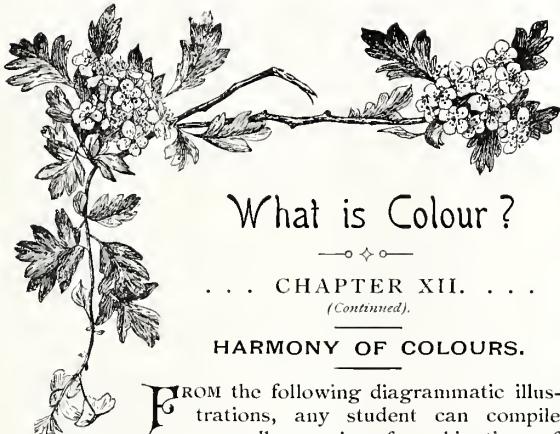


Lancashire. 13.993.

Blackburn. C.B.



Lancashire. 120.064.



What is Colour?

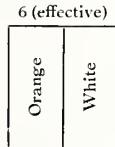
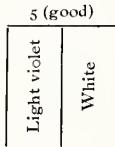
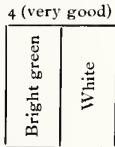
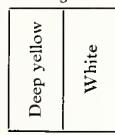
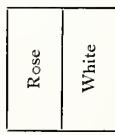
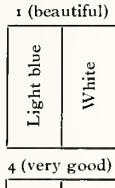
CHAPTER XII. . . . (Continued).

HARMONY OF COLOURS.

FROM the following diagrammatic illustrations, any student can compile an endless series of combinations of colour, either for harmonies of analogy or contrast.

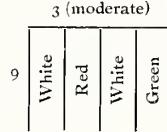
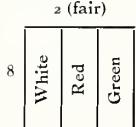
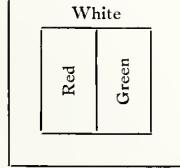
DIAGRAMS AND TABLES OF HARMONIES.

BINARY ASSORTMENTS, arranged in order of beauty:—



TERNARY ASSORTMENTS of Complementary Colours and White:—
RED AND GREEN.

1 (better)



Red and green are almost equal in brilliancy.

Colours.

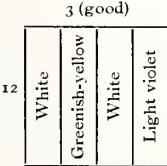
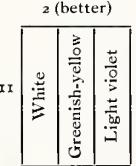
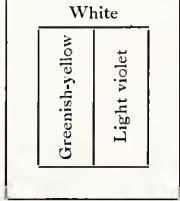
Nature of assortment.

Red and green	.	.	Good, but hard.
Scarlet and green	.	.	Difficult.
Red and yellow-green	.	.	Good, but hard.
Red and blue-green	.	.	Good, but strong.
Orange-red and green	.	.	Hard.
Orange-red and yellow-green	.	.	Fair.
Orange-red and blue-green	.	.	Unpleasing.

YELLOW AND VIOLET.

Superior Series:

1 (best)

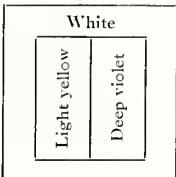


Colours.

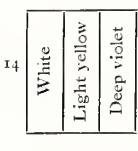
Greenish-yellow and violet . . . Excellent.

Inferior Series:

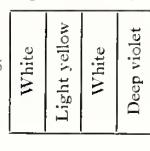
1a (better)



2a (fair)

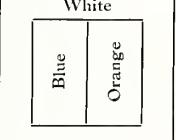


3a (moderate)

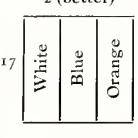


BLUE AND ORANGE.

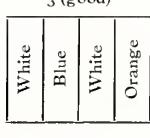
1 (best)



2 (better)



3 (good)



Colours.

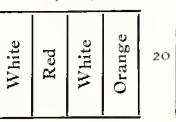
Blue and orange . . . Give a strong contrast.

TERTIARY ASSORTMENT of Non-Complementary Colours:—

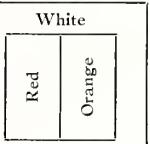
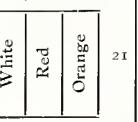
RED AND ORANGE.

3 (bad)

1 (best)



2 (better)



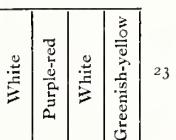
Red and orange do not accord well.

This combination is worse when the colours are heightened.

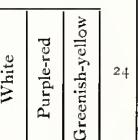
RED AND YELLOW.

Superior Series:

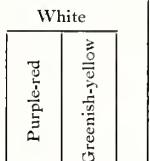
1 (best)



2 (better)

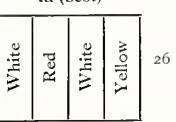


3 (good)

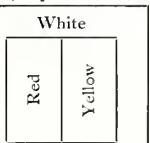
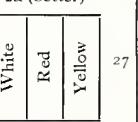


Inferior Series:

1a (best)



2a (better)



Colours.

Red and yellow . . . Accord pretty well.

Purple-red and green-yellow . . . Accord very much better.

Scarlet and green-yellow . . . Strong and hard.

Normal red and yellow . . . Poor or unpleasing.

Purple and green-yellow . . . Good.

Orange-red and green-yellow . . . Fair.

Scarlet and yellow . . . Unpleasing.

Red and greenish-yellow . . . Fair.

The harmony of arrangement with red and yellow and black in the dispositions 2 and 3 is better than with white.

THE BRITISH LITHOGRAPHER.

RED AND BLUE.				ORANGE AND GREEN.			
Superior Series:				3 (poor)			
1 (passable)				White			
28 White				Scarlet-red			
Scarlet-red				White			
White				Blue			
29 Blue				30			
2 (moderate)				White			
31 Medium Series:				Scarlet-red			
31 White				Blue			
31 Light red				32			
31 White				White			
31 Light blue				Scarlet-red			
32				Light red			
32 White				33			
32 Light red				Light blue			
32 Light blue				3a			
33				White			
33				3b			
33 Light red				White			
33 Light blue				Red			
34 Inferior Series:				36			
34 White				Blue			
34 Red				35			
34 White				White			
34 Blue				Red			
35				36			
35 White				White			
35 Red				Red			
35 Blue				36			
36				White			
These arrangements are superior to those with black.				Colours.			
				Nature of assortment.			
Colours.				Orange and green			
Red and blue				Do not accord well.			
Scarlet-red and blue				Orange and green			
Deep tones				Accord well.			
Red and blue				Orange and green			
Orange-red and blue				Accord good.			
Scarlet and blue				Orange and green			
Scarlet and turquoise				Accord bad.			
Orange-red and turquoise				Orange and green			
RED AND VIOLET.				These arrangements are superior to those with black.			
1 (best)				Colours.			
White				Nature of assortment.			
Red				Orange and violet			
White				Accord passably.			
Violet				Orange and violet			
37				Accord better.			
2 (better)				Orange and violet			
38				Accord best.			
White				Orange and violet			
Red				Accord excellent.			
Violet				Orange and violet			
39				Accord good.			
3 (bad)				Orange and violet			
White				Accord bad.			
Red				Orange and violet			
Violet				These arrangements are superior to those with black.			
These arrangements are superior to those with black.				Colours.			
				Nature of assortment.			
Colours.				Yellow and green			
Red and violet				Form a moderate combination.			
Red and purple				Yellow and blue-green			
Orange and yellow.				Form a moderate combination.			
z (better)				The disposal of yellow, green, and black, as in 1 and 3, is better than with white.			
40				Colours.			
1 (best)				Nature of assortment.			
White				Yellow and green			
Orange				More agreeable but less lively than yellow and green.			
Yellow				Yellow and blue			
41				Good.			
White				Yellow and turquoise			
Orange				Moderate.			
Yellow				Greenish-yellow and blue			
42				Good.			
3 (fair)				Greenish-yellow and turquoise			
White				Bad.			
Orange				These arrangements are superior to those with black.			
Yellow				Colours.			
43				Nature of assortment.			
1 (better)				Orange and green			
White				Do not accord well.			
Orange				Orange and green			
White				Accord good.			
44				The disposal of orange, green, and black, as in 1 and 2, is better than with white.			
2 (fair)				Colours.			
White				Nature of assortment.			
Orange				Orange and green			
Green				Do not accord well.			
45				Orange and green			
3 (very moderate)				Accord good.			
White				Orange and green			
Orange				Do not accord well.			
Green				Orange and green			
46				The disposal of orange, green, and black, as in 1 and 2, is better than with white.			
1 (better)				Colours.			
White				Nature of assortment.			
47				Orange and violet			
2 (fair)				Do not accord well.			
White				Orange and violet			
Orange				Accord good.			
Violet				Orange and violet			
48				The disposal of orange, green, and black, as in 1 and 3, is better than with white.			
3 (moderate)				Colours.			
White				Nature of assortment.			
49				Yellow			
1 (better)				Green			
White				50			
Yellow				White			
Green				Yellow			
51				Green			
3 (moderate)				52			
White				White			
Yellow				53			
White				White			
Blue				Yellow			
54				Blue			
3 (good)				55			
White				White			
Yellow				White			
White				White			
Blue				Yellow			
56				57			
White				White			
Yellow				White			
White				White			
Blue				Yellow			
58				59			
White				White			
Yellow				White			
White				White			
Blue				Yellow			
59				59			
White				White			
Yellow				White			
White							

GREEN AND BLUE.

1 (better)

White
Green
White
Blue

2 (moderate)

White
Green
Blue

55 56 57

3 (bad)

White
Green
Blue

These arrangements are better than with black.

Colours.

Nature of assortment.

Green and blue Make an indifferent combination.
Better when the colours are deeper.Yellow-green and blue . . . Good.
Yellow-green and blue-green . . . Bad.
Green and turquoise . . . Bad.
Blue-green and blue . . . Bad.
Blue-green and green . . . Bad.
Blue-green and turquoise . . . Bad.

BLUE-GREEN AND VIOLET.

1 (better)

White
Blue-green
Violet

2 (good)

White
Blue-green
Violet

58 59 60

3 (good)

White
Blue-green
White
Violet

These arrangements are better than those with black.

Colours.

Nature of assortment.

Blue-green and violet . . . Good.
Light green and light violet . . . Preferable to green and blue.
Blue-green and purple . . . Fair.
Green and purple . . . Strong, but hard.
Yellow-green and purple . . . Difficult.

BLUE AND VIOLET.

1 (fair)

White
Blue
White
Violet

2 (moderate)

White
Blue
Violet

61 62 63

3 (bad)

White
Blue
Violet

This arrangement is too crude, and forms a harmony of contrast not at all equal to the harmony of analogy made by black, blue, and violet.

(To be continued.)

A NEW tracing paper described by *Invention* is made from a Japanese plant, the inventor claiming that it is as transparent as ordinary oil paper, although no oil is used in the manufacture. The samples received in Europe proved very satisfactory on examination, the paper being quite transparent and tough enough. Thus there should be a further field for its adoption for photographic purposes beyond the ordinary uses of a tracing paper, though, unless the plant from which it is prepared could be acclimated here, the cost of importation would materially prevent its popular use.



How to Stretch Paper for

Chromo-Lithography.



HE solution of the problem of the treatment of paper for successful chromo-lithography is constantly arousing the anxiety of every printer, and engaging the minds of those printers who desire to see one of the greatest drawbacks to successful work met in a commonsense and expedient manner. There is a machine, known as the "Perfectum" drying machine (Jennings' patent), which aims at meeting the difficulty, during the course of printing, by constantly drying the sheets back to their original dimensions, by a well-regulated supply of heat, after each colour has been printed upon the sheet. Such an invention should receive all the appreciation it so richly deserves, and for all ordinary purposes it can be made to meet the want in view. If, however, some preliminary preparation of the paper will eliminate the fault at the commencement by one operation, it must be a greater saving than can be effected by the "Perfectum" drying machine. Such a remark in no way detracts from the qualities of this machine.

It has been shewn conclusively that a chromo-lithograph can be printed in almost perfect register—so perfect that no fault need be found—upon a good enamelled paper. And better still upon an ordinary printing paper, if such paper be run through the machine, both sides, upon a flat tint of white. The white gives a firm face to both sides of the paper, and very largely obstructs the absorption of moisture which is the main cause of the distortion of paper during printing.

But more recently it has come to light—and there is no knowing how long it may have been in private use—that ordinary paper can be so treated as to prevent, to a very considerable degree, any appreciable stretching during printing. The plan is so simple that it is a wonder the idea has not occurred before. In the majority of cases, distortion during printing does not take place in the direction of the printing operation, but rather across the machine. In fact, it is not the narrow way of the paper which stretches so much as the long way. Therefore, instead of running the paper through the machine in the direction it is to be printed, let it be run through in the direction of its length, prior to printing any of the colours of the work in hand. Chromo-lithographs which have previously been served in this manner, shew a marked degree of perfection of register viewing closely with the much admired large sheets of German scraps which, by the way, have to be imported because English printers will not lay themselves out to meet the home trade.

OUR artist-subscribers should note the particulars of the Initial Letter Competition, as presented on another page in this issue.

Embossing with Engraved Steel Dies.

PROPER NATURE OF THE DIE AND ITS ENGRAVING.

J. YARDLEY JOHNSTON.



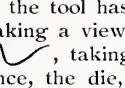
ALTHOUGH one of the most perfect of the industrial arts in intrinsic possibilities, the art of embossing is probably the farthest behind in its development. It is but recently that any achievement in this territory of more than ordinary note has seemed worthy of commendation, and the amount of difficulty which has been experienced by those actively engaged in the art in meeting certain resident deficiencies would surprise a layman uninformed of its non-progressive ness. It is with a view to considering some very important facts, probably constituting a few of the obstacles to satisfactory work and easy manipulation, that a series of articles is intended.

The art of embossing, as legitimately practised with engraved steel dies, differs from the principles involved in mere plate printing, not only in character of pressure, but in nature of inking and wiping media. The die, which constitutes the printing surface, has hitherto averaged small dimensions, 1 x 2-in, being the ordinary size from which a fractional margin of greater or lesser proportion is allowable; this, it must be understood, was necessitated by the use of the hand-press and other considerations inherent to hand manipulation. The plate which, on the other hand, gives its results to the plate printer, has escaped such limitation because of its lesser thickness, the nature of printing beneath the roller, and other reasons. The die must be half an inch thick; the plate not nearly so much. The former is printed by direct impression from above; the latter is printed by squeezing beneath a rolling surface, under which the plate frequently curves into a semi-circle without injury to it or to the impression. The die, moreover, is not wiped and polished by hand, but by paper; the plate is treated by hand, and gives its best results only with such treatment. The plate ink is also different, being mixed in oil, while the die ink is mixed in varnish. From such conditions, incident to each department, it may be understood that neither method of printing is suitable to the other, and that the peculiar difficulties resident in steel-die embossing could not be rectified by attention to the methods and means for steel-plate printing. This is so well understood that the engraved surfaces of the die and the plate receive very diverse execution for the rendering of shadings, etc., at the hands of the engraver; with the steel plate, shading or heavy lines can only be rendered by a multitude of fine lines so arranged as to present the appearance of a widening and narrowing stroke, while with the steel die the shading of letter, or whatever it may be, is made by cutting out the width of line desired with the tool direct. By carefully considering the bearing

of such distinctions upon the nature of the work, much that is to follow in this connection will be made clear, probably for the first time.

The discovery of a principle to enable larger dies to be used also led to the discovery of something which it is very strange that the engraver of dies, if not the printer of them, has not sooner detected. Taking two dies of the same character of lettering, and of the same engraved depth, executed by the same man, and with identical tools, both measuring about the same thickness, only the text of reading matter being different, entirely diverse working qualities have been found. Somehow or other one was wrong, while the other would give smooth and uniform results, so that when the construction of a machine led to the use of larger dies, it became necessary to discover what constituted this defect. Under measurement by micrometer it was found that no die out of a large number used in an establishment was uniform or true—sides, face, and back being mathematically inaccurate. Sometimes the face would be unlevel, the thickness at one edge a sixty-fourth of an inch greater than the other, the sides out of square, etc.; and, in consequence, the results varied accordingly. Upon enquiry, it was found that even the die cutters and polishers themselves were unaware of the defect, and not one would admit the validity of the objection until confronted with proofs. Examination revealed that their machines were defective, and their inattention to accuracy of the blocks of steel grossly culpable. What the results would be needs brief comment. Inability to lock up square; tendency of the die to rock under pressure; imperfect inking, due to irregularities in facial conformation; insufficient wiping, because of untrue surface. These are some of the objectionable features, all of which have heretofore tended to mar the perfection aimed at in the stamping. Printers can readily understand this from the character of their own printing surface; it is requisite that their types should be individually and collectively uniform, as no satisfaction could be expected where the types were of different heights. The same requirements exist with die printing, where greater exactions inhere from other causes; exactions to which both the die printer and engraver have previously been singularly blinded. Let readers engaged in the work of manipulating these dies measure their blocks, and prove the matter for themselves. Of course, with small dies of a minimum size the difficulty becomes minimised; but with machine methods which are now coming into vogue, and with larger dies of which it is difficult to predicate a limitation, the careful consideration of the difficulties before met with becomes absolutely needful.

Engraving the Die.—It is strange that those who do this work have no better conception of the requirements than is manifested in some of the results

obtainable with their dies. The main object—how to get the ink to stay in the die until it leaves it for the paper—has certainly been greatly overlooked in the past, for taking two pieces of work by the same engraver, with lines of equal depth, and with the same tool, one will be found to yield results vastly superior to the other. One will not have the body of ink, will be flat, lacking in gloss and brilliancy; while the other, which to all appearances exhibits the same qualities in the die, and which may have been handled in exactly the same manner, will be full, lustrous, sharp, and will stand forth from the ground with clear, rich outlines and depth of colour. This peculiarity, upon which experiment after experiment has been made, and of which we believe the cause has never been ascertained, or if so, has at least not been made public, here induced investigation, and with perfect assurance of success by proof. Examining into any two dies of different contrasts with the glass, the careful observer will note the following features of the engraving: take a line, and study the nature of the cut with the tool; one edge of the letter will be cut vertically into the face of the die, while upon the other side there will very likely appear a slanting cut where the tool has been held differently. Thus the cut, taking a view of both sides, will appear in this wise, , taking an end observation. As a consequence, the die, if wiped from the slanting side, will hold the ink in the line by the direct wall offered by the vertical cut; while if wiped from the other side, the ink will be carried by the paper out of the line by the sliding surface offered to the action. When the various letters throughout a whole line, and upon the entire surface of the die, are engraved in such a haphazard fashion, printing becomes a matter of accident if perfectly accomplished, and it becomes impossible to so lock up a die as to avoid the difficulty. The trouble has been that the die engravers, habituated to this method of cutting their lines, have never been able to discover the fundamental cause for defection in their work, and the die stamper himself has endeavoured to do the printing without being able to find where the fault lay. Hence a very prevalent obstacle to uniform results on the part of the manufacturing stationer doing such work. If the cut is made sharp from both sides of the line, a glossy and clearly defined brilliancy of effect will result. In steel-plate printing, where the polishing is done by hand, it makes very little difference; but with dies, where a direct pressure of about three hundred or four hundred pounds is maintained, and where wiping is done in a manner peculiar to the nature of the engraved line itself, it is very different.

Taking into consideration the foregoing observations, and remembering the machine execution recently made possible, there at once opens before the art a way to progression which is practically unlimited. Large dies of elaborate character and difficult detail, hitherto impracticable for the hand-press, at once come within the range of possibility, and place us in a position from which we can anticipate the advancement dismally denied us in the past.—*Paper and Press.*

U.S.A. Litho Stone and

Aluminium Plates.

It is good to hear both sides of a question, and in connection with the reports of the discovery of litho stone quarries in the States, the comments of Johnson R. Bigelow, of Cincinnati, presumably an expert, are at least interesting.

He says that for twenty years or more he has been engaged in running over the country on rumours of the discovery of deposits of stone suitable for lithographing. There is a fortune in a lithographic stone quarry. He has visited over two hundred alleged finds of stone of the required quality, but the briefest examination convinced him that the material was useless for the purpose. He believes that, as a matter of fact, the only stone capable of satisfactory use for lithography is that of Solenhofen, and which is growing more costly every year. But here is the point. He is led to believe, though, that when he does discover his long-sought-for bed of litho stone it will be of little value, for the aluminium plate is bound to take the place of not only the litho stone, but the zinc plate.

This is scarcely news to our readers, but it is worth while to chronicle progress in this direction, and on p. 148 of this issue further particulars of comparative costs and weights are detailed.



WHAT type composition has been to the printer and publisher, steel-die embossing and printing has, for several decades past, been to the manufacturing stationer, the printer, and the lithographer. In both domains efforts to provide a means for dispensing with manual manipulation have been continuous and very uncertain as to results; while failure has repeatedly added its discouragements to each new inventor's burden of difficulties.

A manufacturing stationer of New York, J. Yardley Johnston, has perfected a new power embossing and printing press, the result of years of experiment. Full particulars of this machine are to hand, and although extremely interesting and instructive, would occupy too much space to present in our pages, so that we only make a brief mention.

As will be inferred from an article on this page by Mr. Johnston on embossing, the machine has been evolved after much patient study, and is authoritatively pronounced as perfect for the purposes for which it is built; its action is expeditious, and in gloss and minute detail of the die the product is much superior to work done upon the hand-press. Entirely new principles are utilised in its design; it is strictly self-inking and wiping in its action; the strain of impression is directly over the centre of resistance, giving the elastic fibre of the paper pressure enough to thoroughly set it to the new contour required; and the blow may be quickly regulated to the fineness of the lines it is wished to bring out in the impression. This mention will give additional interest to the remarks of the inventor in another article, dealing with the practical application of embossing with engraved steel dies.



German Collotype Printers.



It is only of comparatively recent date that the attention of lithographers has been directed to the advantages of the collotype process, so that probably few in this country realise what a hold it has taken in other centres. For instance, the enterprising sons of the Fatherland have taken it up and pressed it into general use to a degree simply astonishing to those who have not

noted the wide publication of collotype work at home and abroad. The *lichtdruck* printing of our German confrères is thus to be found everywhere, and it will doubtless be of interest to readers to know something of the firms producing it, the class of work they are noted for, and to what extent the process has developed and is being adopted.

Collotype is most numerously and influentially represented in Germany, where the art is distributed over a number of towns, more especially Berlin, Dresden, Leipzig, Stuttgart, Munich, and Hamburg. Including the establishments not exclusively devoted to collotype, but which practice it as a subsidiary branch, the total number of German houses working in collotype is somewhat over two hundred.

Commencing with Berlin, which includes a large number of collotype departments, the Imperial Printing Office merits first notice. This office does not enter into competition with private firms, nor does it undertake orders from abroad. Its first object is to serve the purposes of the Imperial and State Governments, but it is also empowered to undertake work from local boards and corporations, as well as other work which can only be executed in the country with the aid of the unique resources at the command of this office. Orders from private individuals are only accepted in such cases where the execution of the work appears to contribute materially to promote the interests of science or art. In addition to an extensive plant for bookwork, litho, and copperplate printing, the office possesses nine litho lever presses and a collotype press in work for collotype purposes. The process has hitherto been used principally for the reproduction of manuscripts, drawings, and paintings by old masters, bronzes, porcelain, marble, and ivory carvings and other works of art, of historical or eminent artistic value for libraries, museums, and art societies. The reproductions are made either from photographs taken by the office itself or from negatives supplied to it. In addition to collotype, all the other known processes of photo-mechanical reproduction are carried on in the office, for which purpose a special "chalcographical department" has been instituted.

The collotype printing office of the Royal Prussian and Royal Bavarian Court photographer and architect, Herrmann Rückwardt, employs from eighteen to thirty-four hands and a number of collotype presses, and prints both for its own use and for customers reproductions of the highest class in the field of

architecture, landscapes, machinery, engineering, and similar work, besides finished negatives for publishers. Orders for photographs with a picture surface of 100 by 150 centimetres, specially suitable for factories, and silver photo-printing and photo-lithography are also carried out in this establishment.

The collotype and photo-lithographic establishment of Paul Schahl, which was established in 1875, employs steam presses with a staff of fifteen hands. The office makes a specialty of art illustrations for industrial, art, and scientific purposes, together with chromo-collotype. The house also publishes its own books of design.

The Royal Court Art Institute of Otto Troitzsch (1868) makes a specialty of collotype in colours. The work of the establishment, besides collotype, includes coloured photogravures, transfer pictures, posters, and chromos. Some 120 hands and seventy machines are employed, the firm's publishing department engrossing a large share of its collotype productions.

Hermann Hadorff (1872) is exclusively devoted to collotype, employing eighteen hands and fourteen hand litho presses, with some auxiliary machinery. This house is occupied entirely with outside orders for collotype, its specialty being pattern sheets for wood and bronze-ware factories.

The Berl. Phototyp. Inst. Rob. Prager (1876) has seventy employés and both steam and hand-presses. This house is very successful in albums of views in glazed collotype, having issued over 150 such albums. Some 200 views of Berlin and Potsdam, reproductions of pictures in the Berlin museums, and similar work, are also included amongst their productions.

Amongst the most important printing establishments of Berlin is that of H. S. Hermann (1877), which, besides an extensive business in book and litho printing, photo-lithography, and zincography, has worked in collotype since 1879, employing eight hands with two steam and two hand-presses in this department. All kinds of collotype work are executed to order, particularly diplomas, addresses, and works of art.

The "Reproduction" Printing and Publishing Establishment has been established three years, and now employs thirty men, four steam and six hand-presses, being occupied with copperplate and collotype printing, particularly for the illustration of works of an industrial and trade character.

The photographic and collotype establishment of M. Dienstback (1860) employs a staff of fourteen hands, with nine hand-presses, providing all classes of collotype work, particularly pattern sheets for applied art, illustrated catalogues, and other commercial work.

The well-known firm of Meisenbach, Riffarth & Co., Berlin and Munich, employ in their two establishments some 170 persons and twenty presses. The methods of reproduction employed include autotype, zincography, photogravure, photo-lithography, copperplate printing, book and litho printing, as well as collotype printing. The work of this house enjoys a high reputation at home and abroad for its artistic finish.

Among the more recently established Berlin collotype printing offices, that of Dr. E. Mertens & Co. holds a prominent place. The house was established

four years ago, and now employs from sixty to eighty assistants; five steam presses are at work night and day, and two hand-presses are also in operation. The firm makes a specialty of landscape and architectural reproductions, illustrated catalogues, and scientific and artistic work. Particularly in rendering the shades of colour in the reproduction of pictures, natural objects, etc., the house has been very successful. One of its undertakings on a large scale is the reproduction of the finest views in all the most visited parts of Europe; the lists of the single plates and series already published forming no less than eighty pages. Other important ventures are "Peruvian Antiquities" (seventy-two plates) and the "Album of Prize-crowned and Celebrated Horses" (240 plates). Besides these may be mentioned the "Schloss Ansbach" (100 plates), "Zchille's Collection of Arms" (250 plates), "Palais Wilhelm I." (forty-six plates), and publications of the Royal Museum of Berlin.

Special mention may be made of the firm of Albert Frisch (1873), which employs thirty-four workmen, six steam and four hand-presses; and, besides collotype, undertakes zinc etching, autotype, photo-lithography, and chromo-zincography. The house furnishes high-class illustrations in plain and coloured collotype, particularly all kinds of scientific work, microscopic enlargements, reproductions from nature and drawings. This firm is well known abroad, exporting to England, France, and America, and received an award at the Chicago Exhibition.

Turning to the collotype offices in Munich, we may first mention Jos. Albert, art dealer to the Court, established in 1850 by Joseph Albert, the inventor of Alberttype; the house is now managed by Ad. Roepel on behalf of the widow of Jos. Albert. The staff numbers forty-five, and the plant includes three steam and three hand-presses. Besides the specialty of Alberttype, the firm executes work in photography, colour collotype, heliotype, colour Alberttype, photogravure, autotype, and zincography. Awards at some thirty exhibitions attest the character of the work produced by the firm. Its extensive productions on its own account include works of art, *éditions de luxe*, and publications in industrial art, the house having a large export trade with Europe and America.

The Verlagsanstalt für Kunst und Wissenschaft was developed in 1883 out of the publishing house established in 1858 by Friedrich Bruckmann, a branch for reproductions being added thirty years ago. The photographic imitations, reproductions of pictures and works of art, isochromatic photographs, silver printing and photogravure, turned out by this firm have a world-wide fame. The staff consists of seventy persons, working a plant of seven collotype presses, bookbinding machinery, etc. An export trade with Spain, Italy, Belgium, and Austria is busily maintained, while the publishing branch has attained such dimensions as to preclude any mention of individual works here.

Franz Hanfstaengl, art printer to the Court, employs 150 persons, and has four steam collotype presses, five colour-printing presses, and fifteen copperplate printing presses at work. The collotype department chiefly furnishes plates for *éditions de luxe* and

high-class work in general, especially glazed colotypes and prints resembling photogravure. Collotype is used in the first place for the firm's own publications, and besides this only for such orders as possess real artistic merit. In addition to collotype, the following methods of reproduction are in use:—Photography, photogravure, carbon photography, aquarelle gravure, autotype in black and colours, zincography, electro-typing for photogravure, etching, and engraving. The firm exports to America, Australia, etc., and may be classed among the most important of German art printing houses.

J. B. Obernetter (1866) is one of the oldest and best known houses in the branch, and supplies glazed and unglazed illustrations for books, albums, crayon prints for scientific purposes, etc. The firm also undertakes heliogravure, copperplate printing, steel facing in any size, drawings, plans, illustrated works in photogravure, and colour collotypes. As a rule the house only works to order, except a number of reproductions it has published from originals in the National Museum cabinet of copperplate engravings, etc. It has at present from thirty-five to forty employés, and fourteen collotype and copperplate printing presses.

One of the youngest houses with a collotype department is the Kunst-Anstalt "Graphos," Böhrer, Gorter & Co., with thirty employés and five collotype presses. It makes a special feature of high-class collotypes, especially in colours. Its main branch is the production of bookwork electros for black and colour printing; the coloured electros render it possible to reproduce coloured originals with only four plates.

Passing on to Dresden, the oldest house for reproductions with a collotype department is that of Wilhelm Hoffmann (1864). The firm has one hundred employés and ten steam presses, and its productions, especially in coloured collotype, are very popular. Other departments produce lithography, drawing, and printing, and there is a considerable export trade to North and South America, as well as to European countries. The publications of the firm consist of reproductions from the Berlin, Dresden, Florence, and British Museums, and from the Raphael Gallery, views in colour collotype, etc.—*Adapted from "Export Journal."*

IN conjunction with various developments of photo-mechanical work, new features are seen in lithography. One of the latest and most effective steps has been brought into prominence through its conspicuous use in the New York *Truth*, and in fact is already termed by some the "*Truth process*." In reality it is the application of the half-tone process to lithography affording certain advantages in convenience, while its results are very effective. The process consists of the transfer of the key plate in half-tone to the stone. By this means accuracy of modelling and detail are obtained, and several printings are saved.

MESSRS. STOER BROS. & COLES, Upper Thames-street, London, printing ink manufacturers, and well-known importers of litho stones, have registered their business as a private limited liability company, which will be carried on under the name of Stoer Brothers and Coles, Limited.

Zinc Plates and Photo-Lithography.

HE following notes, taken from a *résumé* of the operations in the process initiated by G. Kyrkow, of the Kartographic Institute, published in the *Photographische Correspondenz*, are well worthy of consideration as proceeding from an authoritative source. Although the process is fairly familiar in its general procedure, many of the details will doubtless afford hints of value, while the resulting comparison of photo-zinco and photo-litho work may surprise those who have not gone closely into the subject.

So that clear and firm impressions may be obtained, the negative used must be dense and sharp, while the zinc plates must be finely grained and ready mounted. The consecutive operations may be tersely enumerated as follows :—

1. Before coating the zinc plates with asphalt solution, they must be washed with benzine to free from grease.

2. Small plates may be easily and well coated, just as though collodionising, as the asphalt solution dries very quickly. A tournette or whirler should be used for larger plates.

3. The coated plates must have a golden appearance. Thicker films require a longer time for printing. (The normal time for printing plates, 25 x 16-in., is only four minutes in the sun, and twelve minutes in diffused northlight between ten a.m. and two p.m.)

4. The printing is effected in a printing frame which has a pad of thick felt and wedges.

5. The properly exposed plate is best developed in a zinc dish, with French or Neustadt oil of turpentine. Development proceeds rapidly, requiring one or two minutes. In developing over-printed zinc plates, an addition of Russian turpentine is of great assistance.

6. The developed plate is well washed under a rose tap, freed from drops of water by means of a pair of bellows, and then dried in the sun. (The water drops can be removed from the plate with blotting paper, but it requires careful handling.)

7. After a quarter of an hour the plate is etched in a one per cent. nitric acid solution for one minute, then well washed, drained, gummed and quickly dried.

8. After another fifteen minutes have elapsed, the plate is freed from gum and inked up. The ink, diluted with turpentine, rubbed on with a pad, and the dampness maintained with a gummy pad. If the asphalt image does not take the ink, or does so only with difficulty, one or two drops of lithophile added to the ink will get over the difficulty.

9. The plate must now be washed with water, quickly dried, and the image rubbed with French chalk.

10. The plate should then be prepared either with phosphoric acid and gum, or with chrome alum solution, five to six per cent. The preparation takes two to five minutes.

11. Then the preparation should be washed off, the plate gummed, and quickly dried.

12. The inked and prepared asphalt print is now washed off with turpentine, and dried with damp pad and rags, and finally inked up again with a roller.

13. The plate is now gummed and quickly dried.
14. Allow the plate to rest for a full hour, so as to allow the freshly inked image to ripen. At the end of this time the plate is ready for printing.

15. If the print is not accurately treated, the plate gives a tint and dirty impression. The remedy is to rub the plate with French chalk, and to remove the tint from the plate with an acetic acid solution and moderate rubbing, afterwards washing with water and again preparing.

16. In printing from the machine, more especially in summer, it is advantageous to add a small quantity of glycerine to the damping water.

Thus following instructions, the zinc plates treated with asphalt images give thousands of satisfactory impressions from the steam printing press, and practice shews that this photo-zincography with the steam press gives much clearer, sharper, and more pleasing velvety impressions than photo-lithography. Zinc plates thus treated give an unlimited number of prints, from 7,000 to over five times that amount, without difficulty.

If not required for immediate work, the plates are coated with wax, gummed, dried, and stored away for further use.

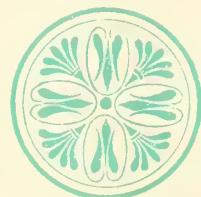
“AMERICAN COMMERCIAL SPECIMENS” (*Amerikanische Mercantil Arbeiten*), published by Josef Heim (12/6), form a collection of some twenty-four quarto pages of specimens of the highest class of American commercial printing. The portfolio encloses genuine masterpieces of designs from the work of the best litho artists and engravers in the States. The specimens include reproductions of cheques, memo heads, business cards, labels, and circulars, all of the highest degree of tasteful originality and pleasing finish, while the lettering—almost entirely in English, and the views, interiors and exteriors of buildings, with their enclosing designs, form valuable features. Artists will find this set a perfect mine of suggestiveness, the perfect reproduction in monochrome and in gold and colours alone making the portfolio a pleasing acquisition. The series may be obtained from the publishers of the B.L.

COMMENTING on our remarks in a recent issue regarding “process work,” *Fame* fully endorses the opinion that British work in this direction is superior to the productions of Continental houses. We understand that the proprietors of our bright contemporary have only recently received commissions from a well-known Parisian illustrated newspaper, for fine process work, which the conductor of the periodical says he can get done better in England than on the Continent. This judgment was not arrived at without reluctance, as the Parisian is—perhaps naturally—*tant soit peu Anglophobe*; only conviction bearing against inclination produced this opinion, and as such it possesses additional weight.

THE offices of our enterprising contemporary, *The Photogram*, and the registered office of the Photographers’ Benevolent Association, have been removed to 6 Farringdon-avenue, London, E.C.

PAGE OF SUGGESTIONS.

Number 5.



Theatrical and *K&J.*

+ Other Posters.



HEN Charles Dickens conversed with the king of the bill-stickers and wondered if that monarch ever sighed to repair to the great wall of China and stick bills all over it, the theatrical poster of the present day was not known. The largest bill ever produced at that time was a thirty-six sheet one, not gorgeously coloured, but very ordinary letterpress, and it would look a sorry production beside the gigantic "Harbour Lights" poster in fifty-six sheets, produced for Messrs. A. and S. Gatti, which measured twenty by fourteen feet, and cost £600 per thousand.

Unfortunately for Messrs. Gatti, it did not enter into their, or anyone else's mind until the bills were printed, that there were only three or four hoardings in London large enough to display the posters; but their experiment, if a costly one, broke the record, and after all was not so bad as that of Professor Kennedy, the genial "laugh-maker of the world." He ordered a fifty-sheet "streamer," of which it was said one was displayed covering the full length of the Aquarium wall.

It is little more than fifteen years since the first pictorial poster was produced, and it is to Mr. D'Oyly Carte, whose enterprise made the public familiar with the Gilbert & Sullivan series of operas, that the pictorial poster owes its origin. At his suggestion a design was made in colours of incidents in the "Pirates of Penzance."

Theatrical managers of to-day know too well the use of these highly attractive posters to cast them on one side. Many a piece that at its production was ranked a dead failure has been turned into a success; and there are cases of persons who have made fortunes by skilful and lavish chromatic advertising. "Jack in the Box" had nearly £10,000 spent on it in advertisements, and became a pronounced provincial success, although it was a fiasco in town. The "Lights of London" had some £25,000 spent on it; the "Silver King" swallowed another £25,000 worth of pictures, and "Harbour Lights," "In the Ranks," "Sweet Lavender," "Grip of Iron," and many others have run into thousands of pounds for printing.

Barnum, Buffalo Bill, Imre Kiralfy, and Captain Boyton have succeeded within the past few years in placarding the London and provincial hoardings with a series of posters magnificent in proportions and in design and skilful colouring, and which must have cost tens of thousands of pounds.

For the sketch for "Claudian," Mr. Wilson Barrett gave £120, and large firms well know how often they pay £15, £20, and up to £80 for really good pictures as "sketches" for posters and showcards. Usually

the theatrical poster designer gets much smaller pay. There are two or three who earn £8 to £10 weekly, but the average pay is not more than £3 10s. for first-class figure draughtsmen.

Opinions differ as to which is the best theatrical poster ever produced, but the consensus of professional opinion favours the "Revolt of Convicts," done for the "Grip of Iron"; or the "Stranglers of Paris," which for vigorous drawing and realism would be indeed hard to beat. In judging, however, theatrical posters artistically, it must not be forgotten that they are seldom printed in more than four colours.

When posters are seen upon the great hoardings of our towns, it would seem to the ordinary onlooker that the theatrical managers could not do this apparently vast amount of advertising from town to town without using some tens of thousands of posters. But that is not so. However strange it may appear, it is nevertheless a fact, that as a rule only 1,000 posters are printed, which by judicious using will last a provincial touring company some three years; by which time the piece has had its run, and posters are not wanted. If the order for a theatrical poster is run up to 5,000 copies, it may be considered that the piece is a great success; and an order for 10,000 copies, which does not often occur, marks it as an exceptional success. Looking at the matter in this light, one can readily realise that the printers of posters, as a rule, print off 1,000 copies, and only keep the stones for a few weeks—sometimes only a few hours—before polishing off the work. If it is wanted again, then it must be redrawn.

Speaking of posters used in this country, it is a great consolation to know that the bulk of them are designed, drawn, and printed here also. There are some striking exceptions, but that is not owing to the want of ability in our countrymen, for we can always point to the picture of "Bubbles," used for Pears' Soap, as one of the finest ever produced, and as one which was entirely worked out in this country. The day has gone when British advertisers need to send abroad, for their every whim and fancy can be catered to if they will only pay the price and give the time to the British producer, as they have had to do in the past to the foreigner.

In this connection of posters and placarding, the Workmen's Exhibition, held in London last year, sounded the keynote of more effective and artistic methods of posting the bills upon the hoardings: the idea being worked out practically upon a large hoarding within the building. The lesson was a good one. Certainly there were some very well-arranged hoardings previously; but since this exhibition the idea has taken a deeper root, and hoardings of a similar character are occasionally met with up and down the country, one of the most attractive being by Sheldons, Ltd., of Leeds, one of whose hoardings—upon the new approach to the joint L. & N.W. and Midland Railway Stations—is very conspicuous for its good taste.—*Adapted from "Stationery."*

Is it not quite true that the loudest and noisiest talkers against the value of advertising are the most covert and assiduous in their efforts to get it for nothing?



Technical Notes.



MANCHESTER.

THE technical class at Manchester, during the past session, has been one of the most practical and most interesting that has been conducted there since its inauguration, some seven years, under the present teacher. The main cause of this has been the association of the practical and theoretical elements, having the joint tuition of a practical printer—Mr. J. Mearns—with the theoretical investigations of Mr. Harrap. The proof of the success of this combination lies in the fact that the class opened with an attendance of eighteen students, of whom fifteen qualified themselves to enter the City and Guilds Examination on May 2nd, and six of the apprentices competed for the Master Printers' Association prizes on April 28th. Such small numbers are apparently very inadequate for a large centre of lithography like Manchester, but it should be remembered that year by year uses up some of the available material for classes, and that in the seven years a very large number has passed through this course of tuition, including employers, journeymen, and apprentices.

During the session just ended, the practical work has included the making of several different kinds of transfer paper, retransfer and plate inks; the transferring to and working of the Hull zinc plates; the actual use of hard and soft plate transfer inks; transposing black to white by different methods; cleaning up old stones and plates; bringing back old and apparently destroyed work, etc., etc. The interest of the students has been thoroughly awakened, and they have not failed to put to the test the various methods shewn and described, and have brought to the class the results of their work. So far as being prepared for the City and Guilds Examination, the teachers have exerted themselves to instil the true principles of the business and its practical bearings, regardless of the oftentimes peculiar and non-practical character of the questions set by the examiner in lithography; and whether they pass high or low, the pupils themselves will know whether the practical character of the course has done them more good than simply studying to pass the examination. The spirit has been truly technical or trade instruction.

The session has been brought to a close with an exceptionally instructive series of visits to the large manufacturers' and printing establishments in the neighbourhood. The first visit was on Saturday, April 14th, when the associated classes of lithography and typography went to the printing machine making works of Messrs. Furnival & Co., of Reddish. The students were divided into three groups, and conducted

through these extensive works by Messrs. Tudor, A. Hale, and Daniells, who exhibited and explained every stage and—as far as possible—every detail of the making of lithographic, collotype, letterpress, and bookbinding and stationery machines, as well as gas engines, from the drawings, to the patterns in wood and metal, through the casting, fitting, and finishing shops. Having completed a thorough inspection of the works, the students were invited to take part in a substantial tea provided in the drawing offices. After tea, Mr. J. H. Reynolds, director of the Manchester Technical Schools, moved that a hearty vote of thanks be given to Messrs. Furnival & Co. for the privileges of such a visit. Mr. Harrap seconded the vote of thanks, making a brief allusion to the generosity of Messrs. Furnival & Co. in assisting the tuition of collotype in Glasgow, by supplying a collotype machine for the use of the class. Mr. Johnson briefly supported the vote, and Mr. Tudor responded at considerable length, expressing himself well satisfied with the part he (and they) had taken if the visit had been any advantage to the classes. He pointed out that it was their desire to make the best possible machinery at the lowest possible rate that could be charged for excellent workmanship. He again intimated that wherever they could see that their assistance could be rightly given for the advance of technical education they would give the matter their best consideration. The visitors returned feeling sated and satisfied, both mentally and bodily, with the afternoon's proceedings.

Subsequently to the above visit, the combined classes also took advantage of visits to the electrotyping and typefounding departments of the firm of Mr. John Heywood, the well-known stationers, printers, typefounders, and school furniture makers, of Hulme Hall-road and Deansgate, Manchester.

On April 21st, also, the classes visited the newspaper printing works of the *Manchester Guardian* and *Evening News*, to see the production of the afternoon edition of the *Evening News*. This visit was exceptionally interesting as shewing the novel modes of procedure used in the rapid production of daily papers, so that they shall contain news received up to within five minutes of the actual selling of the paper in the streets. It is here where printers can see the art of stereotyping carried to perfection and executed within the shortest possible space of time, and where the cost of stereotyping is brought down to a minimum.

The last visit enjoyed by the combined printing classes was to the paper works of Messrs. Chadwick, in Ordsall-lane, Salford. At these works is being put down a machine of gigantic dimensions to produce news paper. The students were shewn every branch of the papermaking industry, and the managers put themselves to considerable trouble and risk to shew the students the most minute details in the process.

With the conclusion of these visits, the students settled down with a healthier notion of the collateral processes which go to build up the printing trade, and with renewed enthusiasm in their search for more information upon the technicalities of their own particular branch of the great publishing business.

Trade Reports.

(From our Special Correspondents.)

DERBY.

THE litho business is somewhat brighter, the Society reporting all members working full time. The collotype trade is good.

THE Annual Prize Distribution of the Derby Municipal Technical College, held last March, shewed encouraging progress amongst students. The removal of the fee disability is a still further incentive to all in the trade to join the next season's classes.

MR. JAMES PEACH, printer, lithographer, etc., Brook-street Printing Works, has been elected to represent King's Mead Ward on the Town Council.

EDINBURGH.

TRADE, which has been bad here for the last two or three months, is now improving.

THE members of the A.S.L.P. have been engaged in arranging for the formation of a technical class in connection with the Heriot-Watt College, and a small committee of employers and workmen has been appointed to make the preliminary arrangements.

ON Saturday, 5th May, a demonstration in favour of an eight hours' day was held under the auspices of the Trades Council, in which thirty-four trades and organisations took part. In Group C were the printing trades; the press and machinemen being first, with banners, etc., and lorry with a small machine, printing a leaflet; next came the litho printers, with banner and lorry with press, printing two cartoons which, having been mentioned in the evening paper of the night before, caused a general rush to be made for them as they were thrown off. Another novelty was the wearing of blue silk ribbons by the members, bearing the Edinburgh and Lithographers' Arms neatly printed from stone. The artists combined with the litho printers, forming a united organisation.

HUDDERSFIELD.

TRADE in the litho departments has been very good during the past three months. One firm has just put down a new machine and the trade seems likely to still further develop.

IT is gratifying to note that the firm of Alfred Jubb & Son, Ltd., have voluntarily reduced the hours of labour for all employés from 52½ to 48 hours per week, wages remaining the same as previously.

LEEDS.

ALTHOUGH correspondents agree that the litho trade has not been brisk for some weeks past, yet at the present time, although several members are still out of employment, business may be considered as moderately good all round. The varied character of the work—from large posters, showcards, and almanacs, to litho work in general—ensures constant running of machines in many offices.

NOTTINGHAM.

THE condition of the lithographic trade is not by any means as satisfactory as one could desire. Some offices are kept well at work, but a number of others are only partially employed.

LIVERPOOL.

THE first ramble of the "Geo. Philip & Son" Rambling Club took place on April 7th, under the guidance of the chairman, Mr. J. P. Jennings. Through Birkenhead to the village of Capenhurst, crossing the Dee at Queensferry, then on to Hawarden, Broughton, and Chester, *en route* for Liverpool—very barely represents the route taken by the party. That the marvellously attractive district was appreciated to the full, and most thoroughly enjoyed, goes without saying. (We regret being unable to give our correspondent's report as fully as it deserves.)

HULL.

THE litho trade in Hull has been very slack for some time, so that one or two establishments have been put on short time. The state of trade generally is bad, and may perhaps be accounted for by the great bank failures, the Hull dock strike, and the colliery strike.

WITH regard to collotype, *Process Work* reports that all the large firms in this country have as much work as they can do, and there is more to be had. Nothing like the former amount of work is now going over to Germany, and English work appears to be giving just as much satisfaction.

Answers to Correspondents.

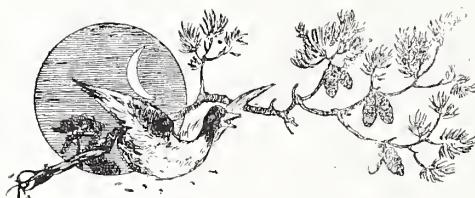
HN Edinburgh correspondent, and Mr. S. Mann, London, will see that their requests have been anticipated in this number by the publication of a special article dealing with tin-plate printing.

MR. L. K. KIRKLOSKAR, Bombay, is referred to the same article as the previous enquirer. We do not know of any textbook dealing exhaustively and practically with the subject, but intend to make the B.L. supply this want, as has been our endeavour in other directions. With regard to machines specified, we would advise communicating with Messrs. Furnival & Co., Messrs. S. Charlesworth & Co., Messrs. Alex. Seegie & Son, and Messrs. G. Mann & Co., whose addresses will be found on another page.

MR. R. H. CLAMP (London), who asks for particulars concerning the chemical constituents of the litho stone, and also a recipe for making litho writing ink, is referred to B.L. No. 2, vol. I., and No. 8, vol. II. These contain articles specially treating of the subjects mentioned in our enquirer's somewhat large order.

MR. G. HARDY (Edinburgh) asks: "Is there any simpler method of making the 'die' (not the matrix) other than by the laborious process of engraving the subject to be embossed on a lithographic stone?"

This method has been adopted as more expeditious and more economical than cutting the matrix in metal, and at present may be considered the cheapest and simplest means of attaining the end in view. Embossing of such a first-class character can only be done by the most careful, and we cannot advise any means of etching by acids which will give anything better than a rough result.



Prize Competitions.



WITH a view to assist artists and lithographers of every branch in the development and progress of their art, and to give opportunities for the display of originality and ability which may be utilised for the benefit of the trade, we propose in this issue to offer two prizes, particulars of which will be found below.

On the result of this competition will depend future arrangements of a similar class, and we confidently ask for the co-operation of our friends throughout the trade, not merely for the sake of obtaining a cash prize, but for the honour of contributing toward trade literature and design, while we would also remind them that the very practice necessary and ability requisite to obtain recognition will be of undoubted service to them.

Well-known writers on trade topics and popular delineators will be welcome to join the ranks of competitors, but we would especially ask hitherto unknown members of the craft to try their 'prentice hand, more particularly in the design competition. If they do not actually obtain a prize, the work and taste involved in the attempt to produce their best cannot fail to be of the highest value in influencing their future work.

COMPETITION A.—We offer a prize of

ONE GUINEA

for the best essay on

“THE APPRENTICE QUESTION.”

This is open to all *in the trade*, employers and employees. Although desirous of allowing competitors a free hand in dealing with the subject, yet so wide are the opinions expressed with regard to it, and so many are the ways in which it may be treated, that we would suggest that competitors endeavour to deal with the practical solution of the difficulty of the supply and the training of apprentices to the litho trade. A thoughtful and practical disquisition on the subject will be of much interest to the trade at the present time, and will doubtless have much influence when circulated amongst its members.

COMPETITION B.—We offer a prize of

ONE GUINEA

for the best design sent in suitable for an

INITIAL LETTER “T,”

appropriate for the commencement of an article on “Navigation.”

The design to be in black ink on white card, and not to exceed 5-in. deep by 3½-in. wide. The design to be drawn in a manner suitable for zinc reduction to one-quarter the size of the sketch.

RULES.

1.—The essay must not exceed 1,500 words (the longest essay will not necessarily secure a prize).

2.—All papers and designs may be signed with a *nom de plume*, but the correct name and address of each competitor must accompany each paper or design submitted.

3.—All papers and designs for competition must arrive on or before Wednesday, July 4th, 1894. The award will be published in the June-July issue.

4.—Competitors should address essays and designs for competition to The Editor, BRITISH LITHOGRAPHER, De Montfort Press, Leicester, and envelopes should be marked “Prize Competition” in top left-hand corner.

5.—The decision of the Editor must be final.

6.—The Editor reserves to himself the right to publish any essay or reproduce any design sent in as worthy of mention besides the successful paper or design.

7.—The Editor cannot hold himself responsible for the return of unsuccessful papers or designs.

NOTE TO COMPETITORS.—Essays must be written on one side of the paper only.

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LITHO ARTIST.—Wanted shortly situation as IMPROVER. Bronze Medallist (South Kensington). Good all-round training.—Address: “ERNEST,” B.L. office, De Montfort Press, Leicester.

PRACTICAL COLLOTYPE PRINTER requires situation.—Address letters to “COLLO,” B.L. office, De Montfort Press, Leicester.

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“ALAUZET,” No. 3—20 x 16-in.—COLLOTYPE CYLINDER PRESS; simple pressure regulator and register; no breaking plates. List price £105; offers.—“PHOTOTYPE,” 12 Clapham-road, London.

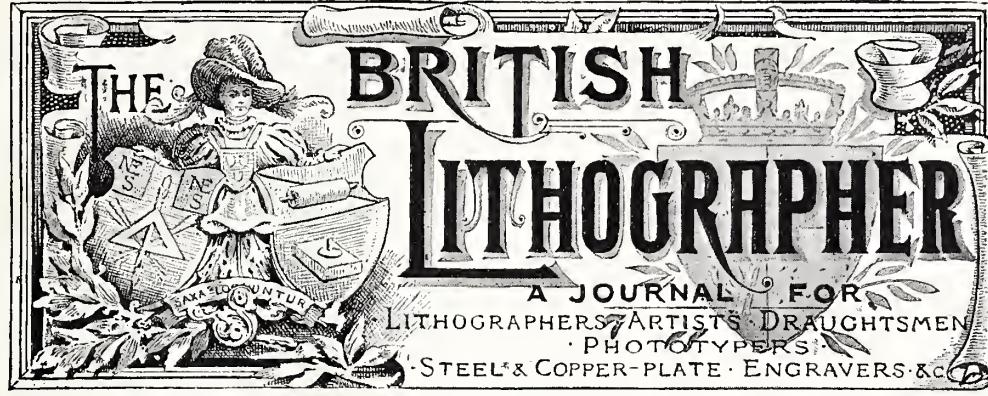
A “NEW MODEL” YOST TYPEWRITER, good as new, splendid working order. Will sell for fifteen guineas nett, including lock-up wooden case.—Apply: “DUPLICATE,” B.L. office, De Montfort Press, Leicester.

WANTED.

WILL firms undertaking PRINTING ON TIN AND OTHER METAL PLATES communicate with advertiser. Mention where specimens may be seen in use.—Address: “MED.,” B.L. office, De Montfort Press, Leicester.

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"Acme" Printing Paper.





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TO OUR FRIENDS AND SUBSCRIBERS.



THE present number completes the Third Volume of THE BRITISH LITHOGRAPHER, and in notifying this step in its career we would tender thanks to our widespread subscribers and correspondents for their assistance and support.

Having now emerged from its initial stage of growth, and being fairly launched upon lines representative of progress in lithographic and kindred circles, the journal has now secured a strong hold upon the trade, and this it will be our constant endeavour to strengthen. Looking back on the past volume we may not unreasonably claim that the aims and aspirations of its earlier efforts have been fulfilled, and it is gratifying to learn from so many sources that the journal is looked to as leading the trade, advancing the art, and individually and collectively assisting workers.

As regards the next volume, many features of interest are projected and in preparation.

The general get-up and style of the journal will be re-modelled, and arrangements are being made whereby supplements shall be largely indicative of the work of representative British houses.

The support of everyone connected with lithography and its kindred arts is asked for, so as to still further make THE BRITISH LITHOGRAPHER *the journal of the trade*.

Anticipating this continued support and emphasising the fact that our interests are very mutual,

We are,

Fraternally yours,

THE EDITORS.



Our Supplements.

THE FRONTISPICE TO VOL. III.

presents a graceful and appropriate design—a floral, panel and scroll combination, intended to be suggestive for such classes of work as include local and general views. Here shewn in two workings, it is one of those adaptable subjects which easily allow of more complex treatment in the hands of the artist by the addition of colours and tints in the panels and in the details of the general design.

THE TITLE-PAGE

is designed as distinctive from that of previous vols. Whilst somewhat sober in colouring, owing to the brown-toned ground, the whole forms an effective and practical example of general chromo-litho work.

THE ARMS SUPPLEMENT, PLATE 7,

presents a further series of armorial designs obtained direct from the places specified. As was anticipated, the publication of the series of arms supplements has proved very acceptable. In course of time these plates will cover sufficient of the ground to form a valuable work of reference. Messrs. Gilby & Herrmann's lithographic inks were used in working this supplement.

THE PAGE OF SUGGESTIONS, PLATE 7, contains a miscellaneous series of hints for designers, capable of ready adaptation.

MESSRS. A. B. FLEMING AND CO.'S, LTD., SPECIAL SUPPLEMENT.

This plate shews four new colours in same design as in last issue of B.L. These inks are excellent in working qualities, the lakes being satisfactory all-round colours for good work. Prices and further particulars are presented at the foot of the supplement.

THE TICKET SUPPLEMENT

by Messrs. J. C. Norbury & Sons, Manchester, is a specimen of work produced by their new patented process, which relates to improvements in lithographic colour printing and preparations therefor, with special reference to the production of pictorial effects in more than one colour. In ordinary practice a separate stone is required to produce each colour, and also each shade of the same colour, as for example, two stones are required to produce dark red and light red or pink. The object of the invention is to simplify the process by reducing the number of stones, and, as a consequence, of the printing operations, to the number of colours required, disregarding shades of the same colour. By means of this invention it is possible to produce finished effects by using only three stones for the primary colours, in addition to a stone for the black or outline when required, and of another stone when gold is required for ticket printing. The darkest colours are produced by solid body colour, and the lighter shades by cross-hatching or by lines or stippling. In the preparation of transfers, there is prepared the requisite number of duplicate outlines,

which are filled in to represent the several shades and colours required. The places where the dark body colour is to appear is filled with black. The lighter shades are represented by grey shades. Two negatives are obtained from each of the so prepared designs, one being an ordinary negative. In the case of the other negative, a line cross-hatched, or prepared glass or translucent screen, is placed in front of the sensitive plate or film, the result being that the negative is cross-hatched, lined or stippled, according to the preparation of the screen. The two negatives are put together so that they register correctly, and the print is taken through both negatives upon sensitised transfer paper. The negative which has been taken without the screen blocks out the cross-hatching or stippling on the high lights. It is necessary or advisable that one or both of the negatives shall be on a film. The prints so obtained are transferred to the stones to be used in the colour printing. In some cases the same process may be used in the preparation of the stone for printing black, when such is required, but in other cases the said screen would not be used in the preparation for the black printing, nor in any case wherein only one shade of a colour would be required.

In the specimen shewn, we are assured there are only six colour printings, so that there is evident an undoubtedly economy in the saving of printings, besides absolutely doing away with all hand stippling—this being obviated by the use of cross-hatched screens in greater or less intensity.

An examination of their specimen label book shews an attractive series of labels designed principally for the foreign trade. No. 30, the "Judge" ticket (7×8 -in.), and No. 31 ($7 \times 5\frac{1}{2}$ -in.), are each printed in four colours, and Nos. 32 to 40 ($4\frac{1}{2} \times 6$ -in.) in three colours—this exclusive of bronzes and black.

Messrs. Norbury are prepared to license the use of this process to other printers on mutually agreeable terms, and as specimens prove that besides the economy manifest in the working, the process is productive of capital work, enterprising lithographers would do well to make further enquiries.

A COLLOTYPE SUPPLEMENT

by Messrs. J. Adamson & Son, Rothesay, presenting a beautiful yacht-piece, was in preparation for this issue, but press of business has delayed its completion. We hope to include it with the first number of the new vol. of B.L.

A FRUIT-PIECE—in colours—has also been unavoidably delayed, and we had to go to press without it. This also will appear in next issue if possible.

PROCESS WORK is quite an established industry amongst the Japanese—"the British of the East"—and there are two or three native firms, besides the Government photo-zinco department, maintained constantly at work. Two journals printed and published in Tokio reach us regularly, and from these and general specimens to hand we should judge that the Japanese craftsmen are almost, if not quite, abreast of European skill in production in collotype, photo-lithography, and zinco work in line and half-tone.

Book Notes.

HE publishers of "Photo-Engraving, Photo-Litho and Collotype," a practical manual, by W. T. Wilkinson (London : Morland & Co., 17 Farringdon-street ; post free, 5/-), announce an entirely new and revised edition (the fifth) of the above standard work. In this issue considerable additions and improvements have been made in order that its position may be maintained as *the* most complete work on the subject published. An entirely new section on "Photogravure" has been added, and the whole volume has been revised and brought up-to-date. A chapter on "Drawing for Process Reproduction," with illustrations, has been furnished by C. G. Harper, author of "English Pen Artists." On many occasions have we had the pleasure of recommending previous editions of this work to the notice of readers, and the additions promised will make the volume almost indispensable.

"ORIGINAL FABLES," by H. Berkeley Score (Lathom Park School, Ormskirk, Lancs. ; 5/- post free), a series of 240 original fables, with short morals, are truly "Sparks of Light from a Fabulist's Diamond Mine."

Though works of this character are somewhat out of the groove of the technical publications noticed here—one would scarcely couple the litho trade with the generally accepted use of the word "fable," yet, as an art including so many reading and educated members, this valuable and original compendium of pithy and thoughtfully deduced stories will be received with a warm welcome. Thos. Bewick, the famous wood engraver, says "Fables have led hundreds of young men into the paths of wisdom and rectitude," and all of us are aware of the interest they ever possess for young and old—the wisest and greatest teachers having recourse to their use. The work is well printed, tastefully got-up, and contains portrait and sixteen small illustrations from copper.

MESSRS. ILIFFE & SON announce the almost immediate publication of "The Photography Annual for 1894," edited as usual by Mr. Henry Sturmy. This year the annual will consist of nearly eight hundred pages of original and useful information, besides twenty-seven full-page specimens of the work of the leading photo-mechanical process workers and a comprehensive business section. Several new and valuable features have been added, such as a specially-prepared "Dictionary of Chemicals used in Photography," and altogether the volume is said to be remarkable for its completeness and bulk. Some idea of the latter is conveyed by its weight, which exceeds three and a quarter pounds.

THE new edition of David MacBrayne's "Summer Tours in Scotland" is copiously illustrated from well-printed half-tone blocks, and is enclosed in a tasteful cover, lithographed in colours and gold, which must attract many purchasers. Holiday makers should not fail to obtain this guide-book (6d.) from their booksellers.

MESSRS. BLADES, EAST & BLADES announce the publication of a volume representing a selection of the finest examples of pictures in the Guildhall Loan Exhibition, 1894. The reproductions will be by collotype, and will include forty masterpieces of art, by such artists as Leighton, Millais, Mason, Waterhouse, Marcus Stone, Whistler, Holman Hunt, Burne-Jones, Romney, Rossetti, &c., while a short description of each picture will accompany each plate. Fortunate indeed is the possessor of such a work.

"INDIAN ARTS AND INDUSTRIES" is a reprint of a paper presented before the Triplicane Literary Society at Madras, by S. Varadachary. In some twenty-four pages a fascinating account of Indian manufactures and native art is set forth, well repaying the attention of readers interested in arts and crafts.

The July number of *The Art Decorator* (London : Hodder Brothers, 18 New Bridge-street, E.C.) commencing a new volume, worthily upholds the fame of the series. Two figures—allegorical and historical—are contributed by Prof. G. Sturm ; chrysanthemums occupy a page of border, panel, corner, side, and varied ornamental pieces—most useful as a study, and the same may be said of the Boroch ornament following ; the coloured decorative panels and the monochrome "seasons" panels are likewise suggestive and charming as pictures.

"The Art Decorator" is simply a mine of wealth to artists, and marvellously inexpensive.

THE origin of mezzotint was for some time ascribed to Prince Rupert, Palatine of the Rhine. The circumstance which led to its discovery is thus related by Evelyn, the author of "Sculptura":—"The Prince going out early one morning saw a soldier cleaning his musket from the rust caused by the night dew, and on examining it, perceived something like a figure corroded upon the barrel, with innumerable small holes like friezed work on gold or silver, part of which the soldier had scraped off. He (the Prince) at once conceived an idea that some contrivance might be found to cover a copper plate with such a grained ground of finely-pressed holes, which would give an impression all black, and that by scraping away those parts required to be white the effect of the drawing might be produced. He communicated his idea to Wallerant Vaillant, a painter in his service. They made several experiments, and at last invented a steel roller cut with tools to make teeth like a rasp or file, which produced the black ground which in some measure answered the purpose intended." The authenticity of this account is questionable ; according to Heineken, an officer in the Hessian service was the inventor, and Prince Rupert learnt the secret from him, and brought it into England when he came over the second time with Charles II.

MESSRS. MARCHANT, SINGER & CO., publishers of *The Paper Makers' Monthly Journal, Directory of Paper Makers*, etc., announce that they have removed to their re-erected premises, 47 St. Mary Axe, London, E.C.



The St. Bride Foundation Institute.



In view of the near completion of the building, and the opening of the swimming bath and the technical printing schools, the governors have approved a prospectus shewing the various objects proposed to be dealt with in the Institute. As regards the

TECHNICAL PRINTING SCHOOLS,

the preliminary announcement says that the promotion of technical education being one of the chief objects of the Institute, typographic and lithographic printing schools will be established for the purpose of affording instruction in such branches of technical knowledge as cannot usually be obtained in the ordinary workshop.

Classes will be held in subjects connected with the different branches of the printing and allied trades. The instruction, which will be given by competent teachers, is not intended to be a substitute for the practical training of the workshop, but to supplement it. The typographic printing school has an area of about 2,300 square feet, and the lithographic printing school an area of about 1,500 square feet. These schools will be well ventilated and lighted by electricity, and will be fitted with all necessary appliances for practical instruction in each branch of the subject. The classes will be open to students of not less than sixteen years of age.

Students attending the Institute's courses of technical instruction will have available for their use the unique collection of books and pamphlets on the art of printing and kindred subjects, purchased by the governors on the death of Mr. William Blades. This will form an appropriate library of reference, containing as it does nearly 3,000 volumes, about four-fifths of which are works relating to the art of printing, while many of the remainder may be taken as specimens of typography, illustrating its progress at various periods. This collection is placed in a separate room, called "The William Blades Library."

Through the generosity of Mr. J. Passmore Edwards there will also be available for students a technical library, consisting of modern works on printing, paper making, bookbinding, and the allied trades. This collection will also be distinct, placed in a separate room, and called "The Passmore Edwards Library."

It is hoped that, as an additional attraction, and in order to make the classes popular, a monthly chronicle of events and information concerning the Institute may be compiled and printed by the students.

It is anticipated that this branch of the Institute will be ready for the admission of students in October next.

A LIBRARY.

The governors hope to be able to establish at the Institute a public lending library, on a scale adequate to the wants of the neighbourhood.

READING AND LECTURE ROOMS.

On the ground floor a room (25-ft. x 17-ft.), and on the first floor a room (50-ft. x 27-ft.), will be set apart for the use of members of the Institute for reading and study. The larger room will also be used as occasion may require for lectures, entertainments, exhibitions, etc.

Members of the Institute will be entitled to the free use of the reading rooms. They will also be entitled to admission to the lectures, entertainments, etc., at such reduced fees as may from time to time be determined.

SWIMMING BATH.

The long-felt want of a swimming bath in the city of London has induced the governors to make such a bath one of the principal features of the Institute. They have, therefore, assigned to this purpose the largest possible space at their disposal, and have constructed a bath 75-ft. in length with an average width of 25-ft., and a depth graduating from 3-ft. 6-in. to 6-ft. The heating apparatus has been so constructed that the bath may, if necessary, be used throughout the year. Being in the heart of the city of London, and easy of access to those employed in the many warehouses, wholesale and retail establishments, and workshops, the advantages of a swimming bath will, it is believed, be greatly appreciated by persons of both sexes. In addition eight washing baths will be provided.

GYMNASIUM.

This portion of the Institute (48-ft. x 23-ft.) the governors hope will afford ample opportunity for healthy and invigorating recreation. The gymnasium is situate at the back of the building, a few feet above the level of Bride-lane, and on a level with the gallery at the south end of the swimming bath.

HONORARY MEMBERSHIP.

It is intended to solicit the co-operation of influential employers of labour and other persons, and to induce them to testify their appreciation of and interest in the Institute by becoming honorary members at a minimum subscription of a guinea per annum. In proportion as this appeal is successful, the governors will be enabled to extend the scope of their operations.

Honorary members will be entitled to free admission to any portion of the Institute, except the baths, payment for which will be at membership rates.

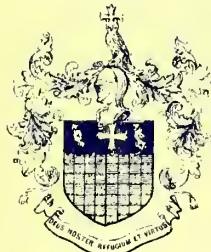
MEMBERSHIP.

Persons of either sex, from sixteen years of age upwards, desirous of joining, will pay a registration fee of 1/-, and if admitted, a subscription of 7/6 per annum, or 2/- per quarter in advance.

"Thorough" is evidently the motto to be applied to the governors in charge of the St. Bride Foundation Institute, and if as successfully carried out as it is skilfully designed, the scheme will prove of inestimable benefit to at least one section of the coming race of printers.

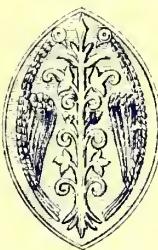
The Arms of the Boroughs & Towns of Great Britain.
Containing various points of note for the artist on the ART of BLAZON.

Dewsbury, M. B.



Yorkshire. 29.847.

Chard, M. B.

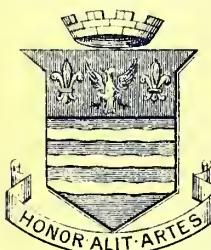


Chelmsford, M. B.



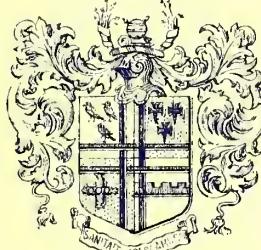
Essex. II.008.

Burton on Trent, M. B.



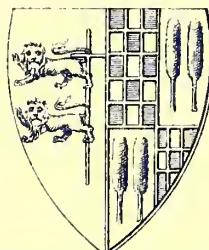
Staffordshire. 46.047.

Croydon, C.B.



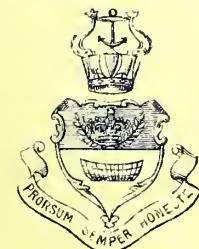
Surrey. 102.697.

Droitwich, M. B.



Worcestershire. 4.021.

Devonport, C.B.



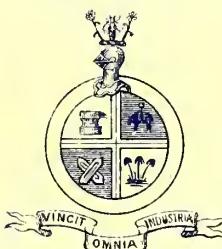
Devonshire. 54.736.

Dover, M. B.



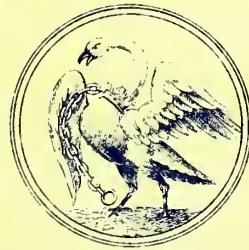
Kent. 33.418.

Bury, C.B.



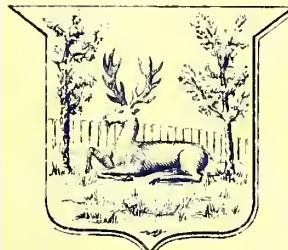
Lancashire. 57.206.

Chepping Wycomb, M. B.



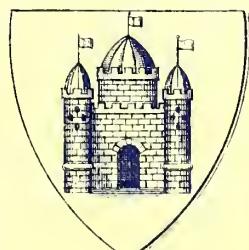
Buckinghamshire. 13.135.

Derby, C. B.



Derbyshire. 94.146.

Clitheroe, M. B.



Lancashire. 10.815.



BY CHARLES HARRAP.

CHAPTER XV.

TRANSFERRING.

COLD OR WARM STONE?

HAVING fully described all classes of transfer papers, more especially the nature of the materials used in their composition, the next point is to consider how to treat transfers when placed in the hands of the transferrer. In the first place, the majority of houses do not make their own transfer paper, or if they do, the matter is kept a comparative secret, and many in the same house do not know of what the composition is composed.

In dealing with this matter, the absence of knowledge may be assumed, thus allowing of closer description.

The question as to when to use a warm stone, and when a cold one, depends entirely upon the transferrer's own convenience, coupled with a knowledge of the transfer paper in hand. The latter so often varies, that it is advisable to use a distinct test before proceeding to put any transfer down. If the composition is a readily soluble one, it will at once become sticky, tacky, or slimy on the application of a little water; and to do this, put a drop of water on the corner of the paper, and take off the surplus water. Then test it with the finger. If it becomes only slightly sticky, then it most probably contains a large proportion of one of the harder glues or gelatines; and if it cannot be made to feel more sticky with a little more water, it had better, for safety, be put down to a warm stone. The other point for consideration, before adopting the warm stone, is whether the work must be transferred exactly the same size as the original. If so, then at all risks it must be put down upon a cold stone, or mounted firmly upon card or zinc, before being transferred to a warm stone. Again, as a rule, lithographic "writings"—executed by the class of lithographic artists known as lithographic writers—are written upon a transfer paper, the composition of which is mainly a gelatine. In those cases, use a warm stone, until such time as the trade has permanently adopted a standard composition,

applicable to all purposes of drawing, writing, and transferring, which can be put down upon cold stone.

The time has gone by when the warm stone was considered imperative. The old idea that some of the drawings were so fine that it was necessary to use a little warmth in the stone to assist the ink, has been abandoned in the case of all new—or comparatively new—work. If the work is really old—say six months to a year—and has a dried appearance, then it is advisable to use a stone just slightly warmed. Or, if the stone be cold, then give it a slight treatment with turpentine, which will permeate the old ink and revive its greasy qualities, if they appear to have become dormant. Almost any printer can tell an old from a new transfer—if one is only three weeks older than the other—by mere inspection, and he will be free to exercise discretion as to whether he uses a warm or a cold stone, with a previous treatment of turpentine.

It is customary to use a warm stone when transferring lithographic writings, copperplate or steelplate transfers, chalk drawings, and large sheets of very fine labels, headings, or tickets which have been pulled upon thin hard paper, and have taken some time in preparation. A transferrer would not be far wrong in making a practice of so doing wherever possible. But it will be as well for every transferrer to take opportunities of getting accustomed to putting down upon cold stone any class of transfer which may come in the ordinary routine of business. At the present time there are transferrers who never use a warm stone—all transfers being successfully put down to cold stones.

Just in the same way that it is customary to use a warm stone, so there are cases in which a cold stone is a necessity. For all work being transferred for absolute register, such as a series of colour stones of any particular design (transferred one by one), plans, or mechanical drawings made to scale, the cold stone process must be followed.

If the transfers have been pulled upon varnished transfer paper, then it is necessary to use a cold wet stone, and in addition the transfers must be damped.

The whole principle of transferring resolves itself into axioms, which must govern the procedure. Whether the work be upon copperplate transfer paper, chalk transfer paper, or any ordinary transfer paper, it is necessary, if register is to be obtained, to put it down upon a cold wet stone; or such means must be taken, of which further details will follow, to secure the nearest possible approach to register by careful mounting if the wet stone is used. As to the use of cold stone, there is no doubt it is the most expedient, when pressed for time.

A short comparison of the cold and warm stone processes will make the differences more readily appreciable, thus :—

COLD STONE PROCESS.

1. Stones are always ready.
2. Damping the stone is but the work of a few moments.
3. Dry transfers are used, which are easy to handle and lay.

WARM STONE PROCESS.

1. Stones need to be warmed.
2. Damping the transfers requires an expenditure of time and trouble in the use of the damp book.
3. Damp, limp transfers are used, which require considerable care.

4. Transfers need not be mounted to prevent stretching. Transfers to cold stone seldom stretch.

5. When transferred, the stone can be readily cleaned up and proved.

The above table shews at once the advantages of the cold stone process, and it is to the interest of the trade to follow the course which tends to cheapen the production, and assist the trade of the country against the competition of more advanced countries.

CHAPTER XVI.

TRANSFERRING—(*continued*).

IN chapters XI. and XIV. the subjects of retransfer ink and transfer paper have been fully dealt with, whilst in chapters IV., V., and VI. the inks and chalks used by the artist or draughtsman are treated in detail. With the whole circle of information thus given, it appears unnecessary to describe the process of transferring. But, although it seems a merely mechanical act, yet there are points in it worthy of more than passing consideration. In the first place it will facilitate the details by enumerating the objects which the transerrer should aim at, viz. :—

1. In the case of ordinary transfer paper—as used by the draughtsman, writer, and transerrer—to release all the composition from the face of the paper without breaking the continuity of the face of it.
2. To secure perfect register.
3. To prevent doubling.
4. To obtain sufficient adhesion at the outset to allow of further running through the press.
5. To completely transfer the greasy ink to the stone.
6. In the case of photo-lithographic transfer paper, the greasy ink has to be transferred without breaking the surface of the transfer paper.

To obtain these objects the first apparatus used is the

DAMPING BOOK.

The damping book of a conventional style has become an almost universal accessory to all printing establishments, and perhaps it is better, where both large quantities and large transfers are constantly being put down to stone, to have such a book, rather than employ any of the expeditious methods which after all are only temporary savings of time. The damping book may be made in a variety of ways. Thus, an alternate series of thick sheets of blotting paper and thin printing paper, with the blotting paper damped nightly to keep the moisture even for the next day. Always put a small quantity of izal, carbolic acid, or permanganate of potash in the water used for damping. The book may be built up of twenty or thirty sheets of heavy printing paper, alternate sheets being damped. Or, of alternate sheets of heavy and light printing paper. The variety which can be used is large. In all cases it is advisable to place this "book" upon a board covered with sheet lead, and to cover it with another board similarly lined with sheet lead. The upper cover, if large, cannot be made of the necessary weight, and in use its weight must be supplemented by putting upon it a 56-lb.

4. Transfers should be mounted to prevent stretching. Otherwise, unless they are pulled upon a very strong material, it is impossible to prevent stretching.

5. When transferred, the stone must be gummed up and allowed to cool before it can be cleaned and proved.

weight, or thereabouts, according to the size. Other means could be adopted, such as a screw-press; and still further improvements may be made by more or less expensive attachments to open the sheets more readily. But the form as already described has very few drawbacks, and may be considered to meet the purpose quite well enough.

For expedition—that is when the damp book is out of order, or where a damp book is not used—there are several means of damping which serve the same purpose. The simplest is to damp a piece of paper and place the transfer upon it for a moment whilst the back of the transfer is sponged over. This is a very common way of damping transfer paper for copper-plate presses. Another method, which is applicable to any kind of transfer, is to thoroughly damp a linen cloth, then wring it out and fold in two or four. The folds can be used as a damp book by putting thin printing paper in for the transfer to lie upon and to cover it.

The amount of damping necessary is a point requiring both experience and judgment.

The damping of transfers is not a matter which can be left to chance. The length of damping necessary will all depend upon the particular kind of transfer paper which has been used. Thus, if the paper—or rather the composition on the paper—is thick, and by the tests already given at the beginning of this chapter will become sticky by the application of a little moisture, then the time for damping the transfer must be limited to such an extent that the composition is only damped upon its surface; otherwise the moisture will get all through it, and when put under pressure in the press it will be pressed out flat, and with it the work will be also pressed out beyond its proper limits. This precaution is more particularly necessary when using the thick transfer paper for grained chalk subjects. Not only is injury likely to arise from spreading on this paper, but there is the greater chance of injury from the amount of moisture actually dissolving the chalk, and causing it to run smutty before the work is etched. It should be remembered that chalks contain an amount of readily soluble soap, which on the slightest addition of water will cause the other constituents of the chalk to run together and fill up the grain of the paper. The act of damping has not, as a rule, any other purpose than merely moistening the composition to secure the adherence of the paper to the stone. It is only in such cases as very old transfers that the damping is expected to assist the actual transferring operation by moistening the ink and thereby reviving its nature to a small extent.

[To be continued.]

THE new Ordnance Map of London, on the scale of five feet to the mile will, it is expected, be completed before the end of 1896. The 752 sheets are to be reproduced by zincography.

THE results of the May Examinations in Lithography are not sufficiently complete up to going to press. The full list—as received, will be published in our next issue.

Iron Show Tablets.

—\$—\$—

PON a closer investigation of this subject, it appears that the two previous notices upon iron show tablets which have appeared in this journal, only touched the very fringe of the matter so far as concerns the enumeration of the various tablets now in use.

It may be that the last few months have witnessed a large increase in the iron tablet advertisements, or that at the outset only the most prominent ones attracted attention. One thing is certain, that the number of iron tablets has reached a very considerable total; and taking into account the sizes of many of them, it must have deprived lithographic printing firms of a vast amount of work.

Wherever one goes, the iron tablet is to be seen in quantity. Not only the great and well-known firms in every branch of trade, but every local concern of any pretensions, have numerous iron tablets throughout the district; in places where previously such a class of advertisement had scarcely been admitted upon paper, there the iron tablet now gleams. It may be thought that the iron tablets are extra advertising luxuries to those concerns, and that they continue to employ printing establishments as much as ever. But that is not so; for there are now many iron tablets in the old places of lithographs, and in railway stations where the old framed lithograph was once so common, now the iron tablet supersedes it. Such an example is "Branson's Coffee," with the two spades upon it, which is now seen as an iron tablet (60×24 -in.) in blue, brown, and white. Another somewhat similar example is "Price's Palmite Candles," bearing the burning candle. This tablet can be seen in two sizes, the later one being 50×24 -in. The same firm has recently had another design made for the same commodity, but not upon quite the same artistic scale. Following closely upon these, is the series of advertisements upon iron tablets with a semi-spherical centre. Of these there are many used by Pears', others for "Neave's Food," and others for "Kinloch's Catalan Invalid Wine."

As instances of tablets superseding lithographs in the same posting positions, may be mentioned the three tablets of "Bird's Egg Powder," "Bird's Custard Powder," and "Bird's Run and Read." To the same category belong the window tablets in iron, of the "Wood Mowers," by the Dangerfield Printing Co., of London. There is a view in the centre, the whole being worked in colours, and the lettering brought out in high relief.

The well-known Cranston's Waverley Hotels are now advertised upon tablets in black, brown, and buff, measuring 50×30 -in.

There are, perhaps, few who have gone in for the variety of tablets more than the Sunlight Soap people, and at the same time they are steady patrons of lithography. Amongst their numerous tablets may be mentioned: "Happy Thought," etc. (30×20 -in.); "By Appointment," etc. (60×36 -in.); and "Gold



Medals," etc. (35×24 -in.), all in one or two blues and white; "Don't Worry," etc. (35×24 -in.), in blue and white; "Highest Chicago Awards," etc., in two sizes (60×12 -in. and $14\frac{1}{2} \times 7$ -in.), in blue, yellow, and white; and their large tablet, about 90×20 -in. As against the Sunlight Soap firm, Hudson comes out very strongly with tablets already referred to, supplemented by some very large new triangular tablets in wooden frames. Also with small panel having a little figure subject (6×16 -in.) worked out in yellow, red, blue, black, and white. The old paper advertisements upon the full-length footboards of trams have in some places been superseded by "Hudson's Soap," "Fry's Cocoa," "Van Houten's Cocoa," etc., etc.; and on the front of the car, where the destination of the car should be most prominent, there stands out boldly on iron tablets such advertisement as "Brookes' Soap." By means of other large panels, the tobacco manufacturers' tablets endeavour to catch the eye. "Wills," of Bristol, has a series of three tablets ("Westward Ho!" "Navy Cut," and "Smoke Three Castles,") specially adapted for panels under small shop windows. "Hignett's," of Liverpool, have also a series of three tablets designed for the same purpose. This firm also has its well-known brands of "Real Jam," "Cavalier," and "Sunflower" upon separate tablets. "Cameo Cigarettes" are advertised on iron, and "Ogden's Fruit and Honey" may also be seen upon a large plate.

"Burgoyne's Tintara" is now advertised upon some fine 60×40 -in. plates, with a well-executed and attractive bunch of grapes on one and a single bottle on another, in addition to the plate previously noticed. "Mazawattee Tea" is seen in so many different shapes and styles, that the variety is nigh innumerable. "Nixey's Black Lead," in blue and white; "Nixey's Knife Polish" (24×14 -in.), blue, yellow, and white; "James' Dome Black Lead," are samples of the smaller order of tablets; whilst "Taylor Bros.' Pearl Cocoa" is to be seen on a blue and white tablet (12×8 -in.). "S. Fox & Co., Ltd.," of umbrella fame, have a noticeable tablet, with their advertisement confined within an oval. "Max Gregor's Carlowitz" can be seen in a similar oval, but worked out in an entirely different design.

Pears' Soap firm has the familiar "Good Morning," etc., on a tablet some 60×20 -in.; whilst "Brinsmead Pianos," "Willows, Holt & Willows' Linseed Cake," "Waterloo Cake," and "Venus' Soap" are all upon tablets of from 60×20 -in. up to 90×20 -in. The latter firm have other tablets in black and white, $40 \times 10\frac{1}{2}$ -in.; and blue, yellow, and white, 27×16 -in.

"Stephens' Inks" can be seen in three or more sizes, including three of the following measurements: $24 \times 15\frac{1}{2}$ -in., 48×10 -in., and 90×20 -in.; and "Pridges' Inks," in black and white, by Willing & Co., are advertised on a 60×24 -in. plate.

A very attractive tablet is that of "Brown & Polson's Cornflower" (70×38 -in.), in blue, red, and yellow, by the Permanent Enamel Co., of Birmingham; and following that may be mentioned a miscellaneous lot, including:—"Thorley's Food for Cattle"; "Beach's Farinaceous and Condition Powders"; "Spratt's Dog Cakes" (with a good representation of the cake) in

two or more sizes; "Reynold's Digestive Bread," 30×25 -in.; "Mason's Prize Beer Engines"; "Falkner's Dublin Whiskey"; "Bentley's Yorkshire Ales"; "Ellis' (Ruthin) Mineral Waters"; "Norton & Co. (Birmingham, Furnishers)"; "Dean (Birmingham), Furnisher;" "Chamberlain, King & Jones (Birmingham), Furnishers"; "Maple (of London)," with quite a series of tablets; "J. Reid & Sons, Park-row, Leeds"; "Sketchley Dye Works" (with easel, 30×35 -in.), by Orme Evans, of Wolverhampton; "Major, Chemist, Birmingham"; "O'Brien's Billiard Tables"; "Californian Borax" (15×6 -in.); "Atkinson's Household Alcs"; "Whitworth Cycles"; and hosts of others.

Of a smaller and slightly different style are the tablets of *The Sketch* (13×10 -in.), in black, white, and grey, with a figure subject; and the deeply-embossed "Holbrook's Worcestershire Sauce," about 12×10 -in. Of a similar character, but devoid of merit in colouring, is the tablet of "Stone's Ginger Wine on Draught."

"Fry's Pure Concentrated Cocoa" is well advertised on a tablet about 48×30 -in., attractively representing a tin of cocoa. "Edwards's Dessicated Soup" is advertised on a tablet with a tin of the soup. Edwards has also smaller tablets; and, further, Fry (of Bristol) has a good series of four or five different ones.

Last, but not least, may be mentioned some of the newspapers whose advertisements are upon iron tablets, viz.:—*Daily Telegraph*, *Leeds Mercury*, *Birmingham Gazette*, *Glasgow Herald*, *Yorkshire Post*; and some magazines may be seen advertised on iron.

Leaving the iron side of the question, so far as it has been done by enamelling and similar forms, it is interesting to note that an ordinary ironfoundry—Mathison, Wilson & Co., Leeds—has had the production of a first-rate tablet for "Waddington's Pianos." The greater part of the tablet is occupied by a well-modelled casting of a piano. It stands out in high relief, and is worked up in some five or six colours, the tablet measuring 42×40 -in. Similar in aspect, but if anything more highly modelled, are the paper-pulp tablets, gradually growing more numerous, ousting lithography, and keen competitors with the iron tablets. Amongst these may be mentioned a first-class tablet (some 36×24 -in.) for the "United Horse Shoe & Nail Co., Ltd.," with the lettering in high relief, accompanied by a good design of horse-shoes, nails, medals, and the royal arms in relief; the whole being worked up in gold, silver, red, brown, and buff. "Hedge," of Birmingham, has had an elaborate (cast) pulp tablet prepared by the Wedekind and Co.'s patent, London, representing sausages, pork-pie, and polony, all in high relief, and coloured up well. "Groves & Whitnall" (of Salford) and the "United Breweries" (of Bristol) have some excellent pulp relief tablets, brilliantly coloured; whilst the "Ardenbrite" liquid gold pulp tablet, in two colours, is a good example of this new class of advertisements. Probably ere this is published there will be further additions both to iron tablets and to pulp-tablet advertisements. The warning has been given, and our American contemporaries recognise the position also; for they, as well as we, strongly advise printers to be up and doing, having an eye open to what is going on, and following in that course where the leading advertisers are rapidly drifting.

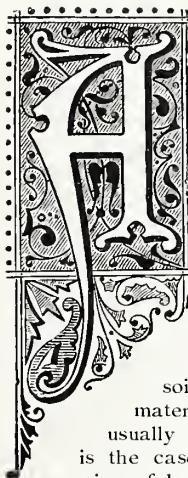
Technical Education.



AT the County Hall, Spring-gardens, London, on July 4th, the third of the series of Trade Conferences held under the auspices of the Technical Education Board of the London County Council took place, the subject for discussion being technical education in its relation to the book, paper, and printing trades. Mr. Sydney Webb, L.C.C., presided, and Sir John Hutton, in welcoming the delegates, spoke of the printing trades as by far the most important which had been discussed at these conferences. He went on to speak of the improved opportunities men now possessed of becoming skilled workmen, as compared with those of a generation ago, and of the deep interest taken by the County Council in this important matter.—Mr. F. Rogers (Vellum Binders' Society) said workmen to a large extent had looked askance at the technical education movement, but they were beginning to regard the subject more seriously. The difficulty up to the present had been that technical education had been carried on in a comparatively unorganised manner. Now, however, it was being organised, and with the establishment of this Technical Education Board a new era in technical instruction had been inaugurated.—Mr. Baxter (National Society of Lithographic Artists) spoke of the training of children in public elementary and continuation schools. He thought there should be technical instruction in the elementary schools, judging that by this means parents and guardians would be afforded opportunities of judging in what trade direction the tastes of boys inclined.—Mr. Edmunds (Bookbinders' Society) entirely opposed this view, urging that technical instruction should be given only as part of secondary education.—Mr. J. Nicol (Electrotypers' and Stereotypers' Society) thought apprentices in that trade would derive great benefit from instruction in the chemistry of the trade. Evening classes would be more useful to apprentices in their trade than day classes.—Mr. L. Matheson (Lithographic Printers' Society) endorsed the views which had been expressed by Mr. Edmunds. To give technical instruction in the elementary schools would, in his opinion, lead to more cheap and unskilful labour being placed upon the market.—Mr. Clarke (National Society of Lithographic Artists) said technical education was wanted to make skilful workmen. He had no fear that it would cause the production of unskilful workmen or reduced wages.—Other questions to which various speakers addressed themselves included the special training necessary for those who desired to equip themselves for appointments as foremen or managers, and the means for making known to members of the trades, and especially to apprentices, the educational facilities provided for their instruction and improvement.

ANSWERS TO QUESTIONS set at the Examinations in Lithography, May, 1894, and prepared by Mr. C. Harrap, our Co-Editor, have been unfortunately crowded out this issue, but will appear in the coming volume.

Disinfectants.



At this time of the year, when the sultry heat gives every form of fungus full play to germinate and grow upon the least fertile soil, care must be taken to prevent, as far as possible, the various matters used in our business from becoming putrid by such fungoid growth. At first sight it scarcely seems possible that all gelatinous or albuminous bodies tend to turn sour or become putrid simply because some fungus has taken up its abode upon these fertile soils and by its life converts these materials into other and different materials, usually having an acid reaction. But, such is the case. A very common example is the souring of beer. Here, the sugar in the liquor is the element upon which a fungus will grow and thrive. In its life this fungus, like animals, uses a quantity of oxygen and respires or gives out carbon dioxide gas (carbonic acid gas). To obtain the necessary oxygen for its existence, it withdraws the oxygen (or causes oxidation of the material) from the groundwork upon which it lives. In withdrawing the oxygen it breaks up the chemical constitution of the material upon which it grows and leaves that material in an altered form. In the case of beer, the sugar is broken up and converted into quite a different chemical compound. Instead of sugar, there is formed in the liquor a quantity of acetic acid, which gives the acidity or sourness of stale beer.

In much the same way, gum, paste, damp paper, damp leather, jam, animal and other vegetable matters suffer a decomposition through fungi living upon them.

As might be expected, sourness most frequently results. Gum arabic goes sour, paste goes sour, and the paper used for the damp book goes sour. The latter cannot be watched too carefully, for with patches of sour paper all through the book, transfers, written or drawn in thin ink, are open to the attack of the acid and most probably undergo a certain amount of destruction.

The souring of gum must be guarded against in a twofold manner. In the ordinary use of gum, its acidity acts directly upon both stone and work to the apparent detriment of the latter. In using gum for gumming up original or other stones for preservation, the souring of gum does not become apparent at the time of gumming up, but after the stone has been put away, sometimes the moisture which has settled upon it assists the fungus, which has had plenty of time and scope for its ravages. The effect is disastrous, for any portion of the work, which is light enough, or thin enough, or consists of fine chalked tints, will be found almost useless. The fungus will have attacked the gum in patches, and would spread all over in course of time. Where the work is thin, the acidity resulting from its life will attack the work

and destroy it, so that precautions of a mechanical nature are taken to prevent this wholesale destruction. Thus, in putting stones away, the best course is to brush or sponge the gum upon a sheet of paper, and carefully lower the sheet of paper upon the dry stone, taking care to exclude all air bubbles. The exclusion of air generally is a most important feature, much more so than the exclusion of solitary air bubbles. It is not very likely that an odd air bubble here and there contains the germs of some fungus, but the air at different seasons of the year is simply laden with germs, which are constantly being wafted to and fro, hither and thither in its currents, and settling upon fertile soil in some form or another. Millions of germs settle on unfertile soil and perish, but still thousands, yea millions, find suitable resting places and germinate. Most people are familiar with the little irritant particles in the vicinity of meadows which cause hay fever; and the fine pollen dust or the particles which constitute the scents of flowers and pungent herbs (caraway, pepper, etc.) which so frequently cause influenza colds. These constitute but a small regiment of the great army of germs or particles which pervade our atmosphere during the summer and autumn months, spreading disease and discomfort. Sufficient has been said in a general way to shew where the fungi come from, and that it is no ghost, no enemy conjured up by the imagination, which has to be fought against by the use of disinfectants.

Disinfectants may be of various characters. There are disinfectants, such as chlorinated lime (the popular chloride of lime), chlorine, and quick-lime, which disinfect by the incontrovertible means of utter destruction of the putrefying matter, and its conversion into inorganic compounds. There are disinfectants which, by their presence, cause such a continuance of evaporation that the current of evaporation combined with the nature of the disinfectant, prevent the approach of germs and render the soil or material totally unfit for them to germinate upon. Such disinfectants are the essential oils of cloves, caraway, pepper, lemon, etc. The less pungent of these may be used without fear for disinfecting some of the materials used in lithography. But some of them, on the contrary, also contain acids, which render their presence injurious, and the smell attached to most of them becomes too nauseous to allow of their constant use except in the smallest quantity.

There are other disinfectants which are in themselves neither acid nor alkali; which do not alter the constitution of the material with which they are mixed; do not give out any disagreeable or strong perfume; and which render the soil or material upon which fungi will grow, so hostile to their growth, that, although they may settle upon the material, germs have not the least chance of commencing their growth.

These latter disinfectants may be termed antiseptics, and of this most important class of disinfectants there are some which are deadly poisons to all animals, and others which are to all intents and purposes non-injurious. Naturally, in selecting a disinfectant, that one is taken which is least injurious to man and most injurious to fungoid growth. As everyone knows, all organisms consist of an albuminous basis, which

must be preserved in a semi-liquid form to retain life. As soon as the albumen is caused to coagulate, or to divide into a flocculent material, then life becomes extinct. Thus when an egg is boiled, the albumen coagulates; when shrimps, lobsters, crabs, and other crustaceans are thrown alive into boiling water their albumen coagulates and their existence ceases. Similarly, when germs of fungi are treated with some disinfectants, their albumen coagulates and they become no more than particles of inert dust.

One of the disinfectants which most readily effects such a change is carbolic acid or phenol. This material, though called an acid, is absolutely no acid at all. If anyone applies the usual chemical tests to it, it can soon be proved that it is absolutely neutral, and it is that neutrality which allows of its use in any of the decomposing materials used in our business, without the slightest hesitation as to what action it will have upon the stone or work. But, the great drawback to the general use of carbolic acid is its poisonous character. Carbolic acid does not discriminate between the albumen of germs of fungi and the albumen of all animal constitutions. If taken into the human system it sets about to coagulate the albumen and cause death. Carbolic acid also burns—and that may be the origin of its name acid—when in use. Carbolic acid acts on the flesh; it burns and whitens the skin wherever it touches—at the same time it permeates the skin and attacks the nerves, causing a slight sensation of numbness or paralysis.

Under such circumstances, if a better and less injurious disinfectant can be used, then for many reasons it should entirely displace carbolic acid.

Such a disinfectant exists in the substance "Izal." This material was discovered early in 1892 by Mr. J. H. Worrall, F.C.S., F.I.C., chemist to the well-known collieries of Messrs. Newton, Chambers & Co., at Thornciffe, near Chapeltown, Sheffield. Whilst investigating the bye-products derived from the Thornciffe patent coke ovens, he discovered an oily substance, hitherto unknown, having properties intermediate between the benzene series and paraffin series. This curious oil yielded a powerful antiseptic body, which (emulsified to allow of its distribution through water) became known as "Izal," and was experimented upon by Dr. E. Klein, M.D., F.R.S., of St. Bartholomew's Hospital, London. He determined that it was capable of destroying the most refractory of fungus germs. As an instance of its power may be mentioned the powerful persistent spores of the bacillus subtilis, which will withstand the effect of boiling for five to six minutes. "Izal," however, when used in the proportion of twenty per cent., will in just over thirty minutes effectually destroy these spores. Of the other spores there are very few which require such a large percentage, or such a long exposure. On the other hand, the proportion of one in two hundred is sufficient in a few minutes to destroy all ibal germs. Again, comparative experiments were made in which some germs were treated with equal proportions of "Izal" and absolute carbolic acid (phenol). These experiments proved that whilst the former destroyed the germs the latter was unable to do so, and the germs from the latter treatment were ultimately brought forth into a good typical growth.

Dr. Klein terminated his valuable experiments by inoculating rabbits with "Izal," and by giving them doses of "Izal" through the mouth. In neither cases did any injurious result occur. Everything seems to point to the great utility of "Izal." It is liquid above the freezing point of water, and as the heat increases it becomes more concentrated rather than suffering deterioration. It mixes readily with water and can be used without fear. In water "Izal" is not soluble, but simply mixes in the same way that palm oil mixes in turpentine. Not only may "Izal" be used for every form of disinfecting, but it is a most useful substance to use on body wounds and as a cleanser of the stomach and intestines from any fever germs which may have entered.

Of other disinfectants there are the more poisonous ones such as corrosive sublimate, iodoform; and others as potassium permanganate, salicylic acid, nitric acid, creasote, sulphuric acid, chloride of zinc, sulphate of iron, sulphur dioxide, formaldehyde, and finely powdered charcoal, several of which are also poisonous.

Of these, creasote, sulphuric acid, chloride of zinc, and corrosive sublimate act by removing water and coagulating albumen.

Creasote, being an impure or mixed phenol, acts practically the same as phenol, already described.

Corrosive sublimate is bichloride of mercury; it is very poisonous, and is used to preserve both animal and vegetable substances. It is a powerful irritant and altogether a very inconvenient substance to use.

Chloride of zinc is the disinfectant and deodorizer known as "Sir W. Burnett's solution." It is also a powerful irritant, and its chemical structure entirely debars its use in the lithographic gums, pastes, etc.

Sulphuric acid acts by withdrawing water from substances and finally breaking up organic bodies. The strong acid character of this material prevents its use in any lithographic material.

Of the other disinfectants, each has its own peculiar mode of disinfecting.

The sulphate of iron acts in a circuitous way by removing the hydrogen sulphide evolved during decomposition and forming sulphuric acid, which ultimately effects the disinfection.

Sulphur dioxide, which is the result of burning of sulphur, is a powerful disinfectant, but quite incapable of use in lithography.

Nitric acid acts by oxidizing the material which is to be disinfected, and its acid properties are too well known to lead to its use as a disinfectant.

Potassium permanganate is the principal ingredient of Condy's Fluid, and it acts by oxidation. It is largely used in sick rooms, and when water is unfit to drink. Its oxidizing effect considerably disqualifies it for use in lithographic materials.

Salicylic acid is a powerful antiseptic, and is used for the temporary preservation of milk, meat, and albumen. It is used to disinfect wounds, and as an all-round disinfectant may be considered good.

Formaldehyde, or formyl aldehyde, is an antiseptic which absorbs oxygen. Nevertheless, used in gum, paste, etc., and for the various photographer's materials which putrify, it has been proved an excellent disinfectant. It has an irritating smell.

In summarising this list of chemicals, there are four which stand out as particularly useful, viz.: "Izal," carbolic acid, salicylic acid, and oil of cloves. For the liquid gum, or paste, and for the damp book, either of the first three may be used. For paste or for greasy bodies the oil of cloves is useful. Of them all, "Izal" is pre-eminently the best. In use, it only needs to add a small quantity to gum or paste, or to add a few drops to the water which is used for the damp book, to completely prevent any souring in either instance.

THE PRINTING TRADE AND GOVERNMENT CONTRACTS.—On the evening of Tuesday, July 3rd, Sir John Hibbert (Secretary to the Treasury) received a deputation consisting of representatives of non-society houses connected with the printing trade. The object of the deputation was to lay before Sir John Hibbert the disadvantages which would result to a large number of workers if the Government inserted a clause into its printing contracts to the effect that none but "society" houses should receive the Government printing orders. Sir John (who was accompanied by the Controller of the Stationery Department, T. D. Pigott, Esq., C.B.) entered very minutely into the varied conditions of labour connected with the printing trade; and elicited from the deputation that it was not their desire that work should be done by underpaid labour, but that *any* employer who paid a fair wage should be allowed to compete for the Government contract work. Sir John Hibbert, in reply, said that the Committee who had the selection of tenders invariably considered the question of wages paid, but that at the same time they desired to act fairly both to non-society and society houses, and in their selection did not give preference to one more than the other. The deputation then thanked Sir John for his kindness, and withdrew; the audience having lasted about one hour.

It is now universally conceded that trade journals—a natural product of the present commercial century—are not only a necessity in the proper growth of a trade, but form a marvellously effective lever in the gradual development of the standard of work, simultaneously increasing the ability and the practical skill of the thoughtful worker. The proper utilisation of the trade journal enables the ambitious, the gifted, and the persevering to lift themselves out of the everyday monotonous routine—so distasteful to active minds, at the same time facilitating the work of specialists, and contributing to the all-round knowledge of those usually restricted to one branch. But beyond its influence and progress, not unnaturally the journal may to no small degree be considered as a reflection of the trade it represents, so that an increasing manifest prosperity evident in the journal should at the same time denote a healthy spirit of enterprise and interest amongst the workers. A loss of subscriptions, decrease of interest and attraction, inevitably calls forth comments derogatory to the enterprise and vitality of the craft itself. Let workers see that their interests and that of their journal are as one, then mutual help and consideration must pleasantly result in mutual advantage.

Aluminium versus Litho Stone.



HE reported probability of aluminium replacing litho stone at no distant period, which was made in last issue, has resulted in many enquiries being made for further particulars.

Our information on the subject was from an authoritative source, and merely intended as a preliminary to a further and more exhaustive description of actual practice. That so many readers have been sufficiently interested to make further enquiries, at least proves their enterprise, and evidences a desire to utilise improvements designed to facilitate cheaper methods of production.

Latest information on this point shews that researches are being continued, and while we understand that experiments are now being made in England, our information as yet is only general in character. In the United States—principally in Philadelphia—a good deal of work has been done with aluminium plates, but we infer this has been largely speculative.

Mr. H. M. Duncan, managing editor of our valued U.S.A. contemporary, the *Lithographers' Journal*, writes very favourably of the Scholz process, specimens produced by its agency being fine in every way, and he is of opinion that this form of plate will be adopted in the Philadelphian offices before long.

As soon as the experiments now being made prove increasingly satisfactory, we will endeavour to give readers the most reliable information and the closest details of working it is possible to obtain.



THE proposal to form an Arts and Crafts Society for Ireland is worthy of all support from craftsmen in any way connected with the Emerald Isle. Resolutions approving of this scheme have been passed by the Corporation of Dublin, the Chamber of Commerce of Dublin, the Royal Dublin Society, and the United Trades Council of Dublin. Its objects are to improve the craftsman and raise the artistic value of his work; to make the workman less of a machine—producing many objects from one pattern; and to hold an exhibition of Irish Arts and Crafts in Dublin during the autumn of 1895, in order that these objects may be effectively carried out. Engraving and lithography are specialised in the schedule for this proposed exhibition, and bearing in mind the excellent intentions of the promoters, it is to be hoped that artists, lithographers, and all exponents of book illustration will see to it that their branches are worthily represented. For many weighty reasons, every opportunity for bringing before the general public and those more immediately interested, the productions of our best and most enterprising houses, must be seized upon. The laudable object of this exhibition is that it helps others to help themselves. Properly conceived and faithfully carried out, the enterprise should be productive of much good to the trade, besides realising the general wishes of its promoters.

Trade Reports.

(From our Special Correspondents.)



HE condition of the printing trade seems to go worse, rather than shew any signs of improvement. In fact it is difficult to find any trade which can shew the improvement which it should at this time of the year. A glance at the actual figures connected with the trade for the past few months shews the rate of increase of the unemployed. Thus, in :—

January, 1894,	the per centage of unemployed was	6·1
February "	"	5·8
March "	"	5·4
April "	"	5·0
May "	"	6·0
June "	"	6·4

This tabulation shews that trade is now worse than in January, at which time it was considered about as bad as it could be. The feature which is perhaps the most unpleasant, is that at this time of year it cannot be expected that any brilliant improvement can take place, for it is only in the season from the end of September to about June that the printing businesses are in anything like full swing. This falling off cannot be attributed to any action taken by those employed in the trade. Disputes have been few, and those which have taken place have not affected any considerable number of employés.

HANLEY.

THE AMALGAMATED SOCIETY OF LITHOGRAPHIC ARTISTS, ETC.: MEETING OF DELEGATES.—This year the delegates from all the principal centres of lithography in England, Scotland, and Ireland, held their "annual" meeting in Hanley, on June 30th. These meetings have now taken place regularly for the last nine years, and have brought the rules into a form which is considered quite good enough for the proper conduct of the Society for some time to come; thus it was decided that for the future these meetings should only take place "triennially." This meeting was also noteworthy for the adoption of a Scheme of Superannuation. This subject has become popular from the attempts which have been made to formulate a State Scheme of Superannuation, deduced from the reports of the Commission upon the subject. The delegates also revised a number of their rules, and satisfactorily arranged the Society's finances. Altogether the meeting was of a most re-assuring character, proving that the artists are thoroughly united in their intentions to improve the conditions of employment, and assist generally to improve the trade of the country.

GLASGOW.

THE annual picnic of the employés of Messrs. Robert Gardner & Co., lithographers and collotype printers, 136 and 138 George-street, Glasgow, took place on Saturday, June 9th. A large party of workers and friends sailed by the *Edinburgh Castle* for Kileriggan. During the day special prizes were offered for football matches and foot races. A four-a-side football match was well contested throughout—the semi-finals were closely contested, while the final was only won after a hard struggle by Farquharson's

(artist) team, which beat Paterson's team by one goal to none. The prizes for the competition were silver badges with gold centres. A liberal supply of refreshments was given to the workers by Messrs. Gardner during the day. The prizes, which were handsome and numerous, were presented to the winners by Miss Betty Gardner, on the homeward journey; after which votes of thanks were awarded to the Messrs. Gardner for their liberality.

EDINBURGH.

TRADE remains much the same in the litho printing circles—that is, moderate; although the artists report trade as dull in their line.

THIS being the picnic season of the year, the following firms have held their annual outings and sports:—Messrs. McFarlane & Erskine, to Carlops on 23rd June; Messrs. Banks & Co., to Carlops on 30th June; Messrs. Kinross & Black, to Newhailes on 7th July; Messrs. McLagan & Cumming, to Carlops on 7th July; Messrs. T. Nelson & Son's sports at Barnton Park, Cramond, on 14th July.

THE Edinburgh and District Trades Council have issued their twenty-seventh annual report and balance sheet, which shews that considerable progress has been made, and that the membership is greater now than it has ever been previously.

ALTHOUGH public attention has been drawn to the number of Scriptural texts, etc., of foreign origin, there are still a large number to be seen for sale in the stationers' windows. However, a firm here secured an order for pictures of the Forth Bridge, printed in colours on silk, for the officers and men of the German Fleet, on their late visit to the Firth of Forth.

AT a meeting of directors of Heriot Watt College, it was unanimously agreed to open a technical class in lithography in September.

The litho printers, with band and banner, attended the demonstration in aid of the National Lifeboat Institution on 23rd June, which was very successful.

LIVERPOOL.

ON Saturday, July 7th, the members of the Social Club, in connection with the litho department of The Liverpool Printing and Stationery Co., Limited, held their annual outing. The weather was all that could be desired. The route taken upon this occasion was by train to Neston in Cheshire. On arrival at Neston at 2·40, the company set out for Heswall, about three miles distant, the river Dee being in view most of the way, and the Welsh hills formed a grand background. After a stroll along the shore, an adjournment was made to Mrs. Jones' refreshment rooms, where full justice was done to a substantial knife and fork tea. After tea a few games were indulged in with intervals for refreshments, and the company left Heswall for Liverpool, via Hooton and Mersey Tunnel, arriving about 9·50, after having spent a most enjoyable half day.

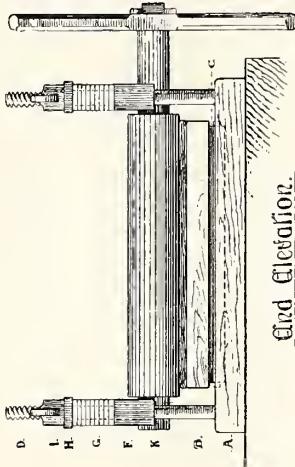
DERBY.

ALTHOUGH little change is noticeable in general trade conditions—no improvement being manifest—yet with the exception of perhaps one firm, the litho houses are all working full time. The collotype branches continue busy.

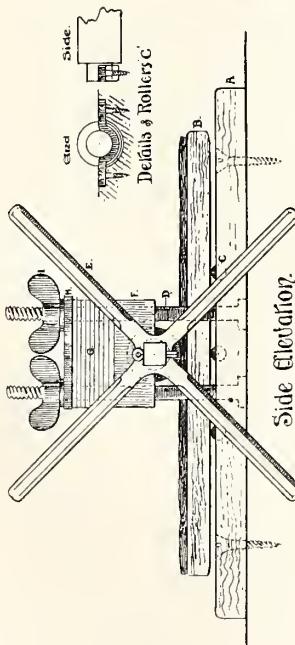


ITALIAN GIRLS.

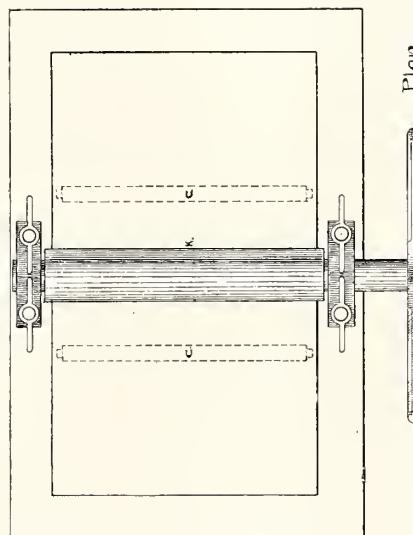
From a Water Colour Drawing by T. Indoni in the possession of W. Blundell Bateman, Esq.



End Elevation.



Side Elevation.



Plan.

PLATE II



Etching, Drypoint, Mezzotint.

BY HUGH PATON.

Associate of the Royal Society of Painter-Etchers.

PART II.

TOOLS.



THE NEEDLE.—Any hard smooth point will do, all that is required being to cut the wax and bare the copper, without scratching it more than slightly. Turner, it is said, drew some of his plates with the prong of a steel fork! A common sewing needle set in a wooden handle is often used. Wooden handles are also made, somewhat like a pencil-case, with a screw arrangement, by means of which different points can be set in them as required. One of these, with two or three darning needles of varying degrees of sharpness, will give the etcher all that is required. I would, however, strongly recommend the use of the solid steel point (*plate I.*, fig. *a*). It is free from the danger of working loose, to which all the others are subject, while its weight helps to cut the wax without effort; and it is important that one should be free from preoccupation with regard to any other matter than that of attending to his drawing. I have not found the solid needles usually sold quite satisfactory; some are top-heavy, and some too small. Mr. Crosland, of Huddersfield (see No. 8), made me a needle to my own design a few years ago, which has been tried by several etching friends and found satisfactory. (A well-known artist writes to me: "Two years ago I used your needle, since when I have used no other.") It is designed exactly like an ordinary pen-holder, of a suitable thickness at the fingers and tapering to the top, with a point long enough to allow of the work being clearly seen. This concentrates the weight low down, and gives a good balance. Two should be kept in the needle-case, one finer than the other, also a third, or an old point of some sort, for occasional use in the acid.

It is worth while taking an odd hour to sharpen the needles carefully, for once in good order they require little or no attention. Sharpen upon an oil stone to the fineness required, rolling the needle between the hands with the point nearly flat upon the stone. One should be as fine as a moderately sharp darning needle, the other somewhat coarser. Examine under a magnifier, and get the point quite round. Then polish it on a sheet of cardboard by drawing round and round in circles, large at first, and getting gradually smaller, until it is smooth enough to glide on the thumbnail without scratching. Once in good

order, keep the points in a bit of cork when not in use, and do not touch the acid with them. Keep an old point religiously for this purpose. *Never* leave your points lying about in the studio; rust is the inevitable result.

The two etching needles will do for the lighter work in drypoint, but for the stronger work on a drypoint plate a special point is required. Snip a little bit off the point of an ordinary needle, and sharpen in two flat sections to a cutting edge, something like the end of a chisel in miniature (*fig. b*). This will cut deeper and with greater ease, throwing up the heavy burr required in drypoint work as no round point can do.

The SCRAPER (*fig. c*) is a bayonet-shaped steel tool set in a wooden handle. The three edges should be kept sharp and free from rust. This is used for reducing surface, removing burr, and effecting other repairs upon the plate. Another kind of scraper which is useful, especially for mezzotint, is shaped rather like a willow leaf (*fig. d*). Indeed, it is very like the eraser found on every book-keeper's desk. Deeply bitten lines can be taken out with it, and it should be kept among the other tools.

The BURNISHER (*fig. e*) is a polished bar of steel, usually fixed in a wooden handle, and is a very necessary tool. It should be kept bright and free from rust spots. Polish it when required in a groove of wood with oil and Tripoli, or other fine powder. This is used on the plate to remove the marks left by the scraper, or other slight scratches. Finish, when necessary after using the burnisher, with charcoal and oil. Sometimes this tool is made of solid steel with double ends. The best double burnishers I know are the two known as Mr. Whistler's. They are obtainable from Mr. Rhind (see No. 8). They cost three shillings the pair, and with them the etcher has all he requires in this direction. The four ends are all different, and they are delightful to work with. I find the best way to keep tools free from rust is to wrap them well in tissue paper, which, of course, must be thoroughly dry, and put away in a box or drawer in a dry place. *Never* leave the tools lying about; the result is vexation of spirit.

The BATH (*fig. f*) may be obtained at any chemist's, and is best in porcelain. One large enough to accommodate any likely size of plate is all you require. Perch your plate upon some smaller dish, such as a saucer, inside the bath, and pour on the acid as previously instructed. The acid can be tilted into the bath as required when a biting is over, and afterwards poured back into the bottle.

The ETCHING BOARD (*fig. g*) has been already described, but I wish to modify the dimensions a little. A convenient size, outside measurement, is 12×16 -in.; it should not be less than half an inch thick, and it is better made with cross pieces at the ends, like a drawing board. This prevents it warping. The well may be 8×12 -in., and three-sixteenths deep. This allows a plate up to 7×11 -in., about half an inch of margin being required to allow of the fastening down with drawing pins. A pair of boards this size will be found convenient for outdoor work, and ordinary work in the studio; for anything larger, a special board could be made. Order them of a light wood.

The hand rest, of a light tough wood, should be as long as the board, say sixteen inches by three wide, and stout enough not to bend under the weight of the hand. Get an extra one made when you are at it; a spare one is very useful. Any joiner will make all these for a few shillings.

If you find any difficulty in seeing the work on the plate, when working in the studio, make a shade of white tissue paper mounted on any light frame of wood or wire. This placed between your work and the light, and adjusted at a suitable angle, diffuses the light so that the difficulty is removed. For outdoor work it is neither convenient nor necessary.

THE ROLLER.

Your order to the joiner should include the roller (*fig. h*). This is a wooden cylinder, say $3\frac{1}{2}$ -in. thick and 8-in. long, with a handle at each end 3-in. long and $1\frac{1}{4}$ -in. thick, by means of which it can be pushed backwards and forwards upon the plate. Round the cylinder is tightly wrapped a strip of fine flannel several times, and the whole covered with a piece of fine calfskin, neatly joined up. The edges of the leather should be turned over the ends of the roller and tacked down out of the way. This can best be done by a tradesman, but do not trust your shoemaker! Mine was spoiled by a coarse skin and a rough seam. It was afterwards put right by a man who makes rollers for lithographic printers, the leather being shaved off and smoothly glued down, so that the join is hardly perceptible. It is smooth as the palm of a kid glove, and lays a fine even ground. The whole cost was five to six shillings. You may save yourself some trouble by ordering an ordinary lithographic roller to be made with the *smooth* side of the skin outward. It may cost a shilling or two more. Messrs. Cornelissen & Son, 22 Great Queen-street, W.C., supply a smaller roller costing about five shillings and sixpence (*fig. i*), which is strongly recommended to me by practical etchers. It is under three inches long, and can be handled more lightly. It has the advantage that a plate which is not quite level can be re-grounded by it without difficulty, and this is no small advantage, for it often happens that the plates become bent with printing, and the large roller lays a ground in such cases with great difficulty.

This instrument is of the greatest possible value for regrounding a plate that is under-bitten. It is also of service for plates too large to be conveniently done with ground in the liquid form. Up to about 8×12 -in. the liquid ground flows freely enough to be run all over the plate, and the surplus returned to the bottle, but for larger plates the roller is more convenient. After using, it should not be allowed to stand, as the ground hardens, and it is difficult to clean off afterwards. Clean thoroughly with oil of turpentine, and put away out of the dust at once. It may be kept in a small bag made upon the pillow-slip principle, with strings to draw the ends close round the handles. In connection with the roller, it is advisable to have three sheets of plate glass of a convenient size, say 10×14 -in. Spare copper plates will do, but they are not so pleasant or convenient for the purpose. Clean the sheets of glass each time after using. Their use has been explained elsewhere (see paragraph on "Re-biting" in No. 10).

PRINTING PARAPHERNALIA.

The HEATER is an iron box, say 10×12 -in., and 7-in. deep. This is a good size for all ordinary purposes. The top should be an iron plate sufficiently strong, say $\frac{1}{8}$ -in. thick, not to warp with the heat. The sides may be made of thin iron. In the four sides should be cut out a semi-circular hole, large enough to admit one's hand. I have sometimes seen a simple iron plate used on the top of the Bunsen, but I think the box is better, as it gives a gentle steady heat with the gas turned low, and a too rapid heating of the plate is undesirable. It should be made by the local smith for half-a-crown. To heat it I use the smallest size of ring Bunsen usually sold in ironmongers' shops, such as would boil an ordinary egg pan. It costs about fifteen pence. This, turned low, gives a steady heat which is ample for your purpose. A yard or two of flexible piping should connect the Bunsen with the ordinary gas pipe. It is lined with wire, and costs about ninepence a yard. If you have not a jet to spare in the studio, an ordinary gas bracket with an extra mouthpiece, to which to attach the tubing, can be made and fitted by your gas man for a few shillings.

The JIGGER is a wooden box of similar size and height, the latter especially, to the heater. Any empty box of suitable size will do. It is used to transfer the plate to when sufficiently hot, and it is of a more convenient height usually than the work table for cleaning off the plate. When not in use it can be turned up, and the printing materials, colours, oil, palette knife, etc., kept all together inside.

The MULLER is a sugar-loaf shaped piece of glass, stone, or marble, costing from a few pence upwards, according to the material: glass is cheapest, and quite suitable. This is required to grind the ink, so as to secure the absence of lumps and grit.

The INK SLAB may be of any convenient material; a sheet of plate glass will do. I use a thin slab of lithographic stone, and find it pleasant to work upon and easy to clean. You could probably get a suitable piece through a local printer for a few shillings.

The DABBER (*fig. k*) is useful for two purposes, and is made as follows:—Spread on the table, face downwards, a piece of fine leather (the palm of an old kid glove will do for a small one). Spread on this a layer of cotton wool, then a little horsehair, and put over that a circular disc of stout cardboard. The edges of the leather are then gathered up and tied at the back into a handle. When finished it is the size and shape of a biggish mushroom. It is better to get a skin of any fine, soft, smooth leather from the leather merchant, and make two dabbers, one to measure, say, five inches across, and another three. Keep the larger one for inking the plate, and the smaller one for dabbing the ground even after using the ball, say for re-grounding to add work, etc. Be careful to clean them always after using. *Never* make dabbers of silk, as is so often recommended. These are responsible for much of the pitting of etching ground under the acid, so often attributed to dust.

The OIL RUBBER (*fig. l*) may be made from a strip of flannel, or soft woollen cloth, four or five inches wide, rolled tightly up and bound round with twine. The ends may be shaved even with an old razor. This is

sometimes useful to clean the plate with a few drops of oil before printing, to remove weather stains, or to polish up after using the burnisher.

I take the opportunity to illustrate (*fig. m*) the sketching apparatus described in a former chapter (see paragraph entitled "Painter-Etching," in No. 15). The sketch shews the arrangement of straps and bag which makes the carrying of the acid bottle both convenient and safe. There are, of course, two boards, of the kind shewn in *fig. g*, strapped face to face, in which several plates of various sizes can be carried with perfect safety.

PRINTING MUSLIN.

The rags to be used in cleaning off the plate are of the greatest importance. Indeed one is largely—I had almost said entirely—dependent upon a supply of rags of the right sort for the ability to get a good proof. The stiff French muslin used is of the sort that our grandmothers made their crinolines of! I do not know where it is to be obtained in this country, but almost the exact equivalent of it is the kind which the ordinary draper calls "stiff book muslin." It is made in Glasgow. Get the coarsest quality made, in white. Any draper will order a piece of a dozen yards for you, and it costs about three-halfpence per yard. It is equally as good as the French, indeed I prefer it. It is moderately stiff, and coarse enough to admit a pencil point between the threads. The stiffness is essential, as it is this which allows of the surface ink being cleaned off without removing what is in the lines. In addition to this, a supply of fine soft muslin is required. It is probably on account of the softness that old linen rags are usually recommended. But old rags are not necessary, and cotton will do just as well. Get from your draper a piece of the soft white muslin known as "butter cloth," and you will have all you require. This is wanted to give the artistic finish to your proof described in the paragraph headed "Retroussage."

THE PRESS.

This is, unfortunately, the most serious item of expense in connection with the practice of the etcher's art. The cost of a press is, I doubt not, one of the reasons, perhaps the chief one, why the final process is so often left to the professional printer. An effective printing press can hardly be bought under from twelve to fifteen guineas, and then the size is limited. Mr. Herkomer speaks in the most cheerful way of spending £30 upon his—a moderate enough sum, but too much for many people. All this, however, is not as one would like to see it, for the question of expense disheartens many a beginner and stands seriously in the way of progress. For, the convenience of being able to test a plate from time to time is not merely a great source of interest, not to say delight, but it is a great help and encouragement. It not only makes the practical pursuit of the art possible, where otherwise it would be impossible, but it teaches the etcher much. Printing, in fact, is part of the artistic process, and a press should be made a *sine qua non*. It is so practically. Sometimes a good press can be picked up second-hand. Such firms as Messrs. B. Winstone and Sons, Hughes & Kimber, Ltd., Furnival & Co., and

others, issue lists from time to time of second-hand presses in stock. Messrs. Robertson & Co., of Long Acre, make a hand press listed at four guineas, which prints up to about 6×9-in. This is a good little press, and mine has done a lot of work during the last twelve years. I have always felt, however, that a simple form of hand press, suitable for screwing down upon the work-table, could be made by anyone with the aid of an intelligent local joiner at a very moderate cost. With the end in view of making this possible to any of my readers, I give a plan of one I had made recently. An etching friend also had one made to this plan in a small provincial town, that is to say, under exactly the conditions that I wish to provide for, and the result of the double experiment warrants me in saying that a press which is sufficient for the ordinary purposes of the amateur, and capable of printing up to say 7×10-in. comfortably, or even 8×12-in. at a pinch, can be made for about a couple of guineas! This is a very practical point, and I am much indebted to the friend just referred to for the carefully drawn plan which accompanies this article (*see Plate II.*). I advise any of my readers who may wish to make himself a press to study it attentively. It is drawn carefully to scale, and any intelligent joiner will understand it at a glance. He can get the necessary castings made at any local foundry, the roller (*k*) of common iron, and the bearings for the same (*f*) in brass or gun metal. He should note to have the roller turned, after casting, with the pointed tool, not the flat one. The latter leaves a polished surface which is not desirable. The pointed tool leaves a surface which is quite regular, but slightly rough and better for the purpose. He can also obtain from the same source, or from the ironmonger, four ordinary bolts (*d*) (square heads preferred to round), say $\frac{1}{2}$ or $\frac{5}{8}$ -in. thick and 9-in. long, with thumb-screws (*i*). These are fitted into the base-board (*a*) two on each side, and at such a distance apart as to take the roller bearings. Above the latter should be two or three thicknesses of cork (*g*), covered with a small plate of thin iron (*h*), and all of these of course fitted on to the pairs of bolts. The thumb-screws will keep everything in place and give practically any pressure required. A lot of pieces of cardboard of the soft coarse kind may be cut and fitted on in place of the cork. These serve the purpose just as well, and can be made by oneself. These should amount to not less than two inches of total thickness, in order that the required amount of "give" may be obtained when the roller mounts the edge of the plate. Under the roller is the travelling board (*b*) which carries the plate. This runs on three rollers (*c*) fitted into the base-board in such manner as to show about $\frac{1}{8}$ -in. above the surface. The centre roller should be exactly below the large one, as in the case of the ordinary domestic mangle. The three rollers should be made to work easily, but the sockets in which they turn should be fitted firmly. The base-board may be made of a heavy hard wood, but the travelling board is better made of ordinary pine or deal. This has a certain amount of spring in it, and facilitates the mounting of the roller upon the edge of the plate. It can be planed down when required or renewed at any

time. A double thickness of the thick felted cloth known as "printer's blanket," and obtainable from any cloth merchant, completes the press. Four short lengths of ordinary wire spring should be placed on the bolts below the roller. These are not shown in the drawing, but they prevent the roller from falling down on the base-board when the travelling board is not in place.

The only difficulty that I have ever experienced with this press is that when the edge of the plate comes to the roller, the latter shews sometimes a tendency to slip round upon the cloth without mounting upon the plate. This is due partly to want of friction, and partly to want of sufficient "give." Hence the reason why the roller should not be polished, but left slightly rough, so that it may grip the cloth and not slip. Hence also the necessity of having sufficient cork or cardboard packing. On a large press this is a difficulty which never occurs, as the greater size of roller gives a very acute angle with the surface of the travelling board, and the plate is taken with a firm grip. But the small size of roller in a hand-press, and the consequent more open angle, leads to a want of grip, if attention be not paid to these little points. As a rule, a slight roughening of the roller surface, which may be done by rubbing with a bit of rag dipped in a little acid, and an increase in the cardboard packing, will overcome the difficulty. Mr. Hamerton's method of fixing two strips of metal, the thickness of an ordinary plate, along the sides of the travelling board I have not found satisfactory. It is better that the amount of "give" should allow of the roller mounting upon the plate without this assistance. It goes without saying also that the metal bearings, packing, etc., should fit the bolts *easily*. If they do not, there is an unnecessary amount of friction to overcome, and this is usually the sole cause of the difficulty. Finally, a couple of strong nails screwed through the base-board into the worktable gives the necessary stability. See that your table is firm on its legs. The only improvement I can suggest upon the plan is that an inch might be added to the *width* with advantage. An increase in the size of the roller would also be an improvement, but that would considerably increase the weight, which is not desirable. The press as it stands can be lifted from the floor to the table without difficulty, and that is often a great convenience in the studio of the amateur.

My advice, however, is that a large press should be obtained when possible, or access had to one when a few good proofs are desired. This small press is only recommended in the absence of a larger one, for the latter will always give better results. My sole object in giving a plan for a hand-press is to make printing possible to those whose pockets cannot afford a larger one. But with this press in good working order there is no real difficulty in getting good results from plates up to 7 x 10-in. or thereabouts, and the educational effect of having such a press beside one for proving a plate at any stage, even though the plates be afterwards sent to the professional printer when extra proofs are required, is very great.

Now, reader, my task is done. I have done my best for you; the rest remains with yourself. If it

has given you half the pleasure to read the foregoing chapters that it has given me to write them, I shall feel amply repaid. But especially if I have succeeded in arousing here and there an intelligent practical interest in this most fascinating art of the etcher—an art which has experienced so wonderful a revival during the last generation, and which is yet so strangely misunderstood by many—the attempt to pull together into concise form the results of a very fitful and Bohemian practice will not have been altogether a vain one. Such at least is my earnest hope.

THE END.

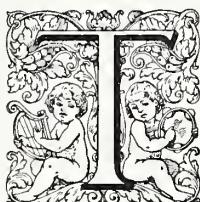
A New Drawing Pen.

*I*n an article upon a new drawing pen one of our contemporaries calls attention to the well known difficulties that draughtsmen have to encounter with their drawing pens. One of the difficulties is the cleaning of the pen. Many a time when the pen is nicely set for a series of fine lines, it is most aggravating to have to clean it out so as to go on with the work. This often necessitates resetting the pen after cleaning, and the difficulty of again matching the line. Not only is this a great drawback, but it is also found that many pens suffer from being left uncleansed. If it were easier to clean them that would not happen. The popular liquid drawing inks contain chemicals which corrode the pen. The water used in mixing Chinese ink also rusts the pen. In cases where vinegar is added to the ink, the acid corrodes the point. These disadvantages do not apply so particularly to lithographic writing ink, which, being greasy, tends rather to preserve than destroy the pens. The ordinary method of loosening the adjusting screw, opening the nibs, and cleaning the pen, loosens the original adjustment, and necessitates a loss of time in obtaining the same adjustment again after cleaning. The new drawing pen claims that by a spring-hinged arrangement of the nibs, that the nib blades can be raised or separated in some fashion, and cleaned. When cleaned, the blades return to their original adjustment and the work can be proceeded with. If this pen fulfils all that is claimed for it, it will be received with gratitude by every draughtsman.

An exchange waxes wise in economy over the wear and tear of lead pencils. To preserve their periods of usefulness it is advised to take a gross of pencils and place them in a jar of linseed oil. Allow them to remain in soak until the oil thoroughly permeates every particle of the wood and lead. This has the effect of softening the mineral, at the same time making it tough and durable. It has been found very useful and saving, an ordinary pencil lasting twice as long under the new treatment.

MR. AUBREY BEARDSLEY, the editor of the much criticised *Yellow Book*, is devoting considerable attention to the composition of posters, the famous "greenery-yallery" theatrical poster, now on the London hoardings, being one of his creations.

Applying the Varnishes in Stone Printing.



correctly utilise varnishes for general machine printing necessitates not only a wide practical experience, but an insight into the character of the work and the paper to be used. In this direction, some really useful information from a recent issue of *Freie Künste* is well worth reproducing, at least, such sections as bear more immediately on actual manipulation.

To commence with printing on the hand-press, the following varnishes are recommended as suitable : gold varnish ; strong, medium, and weak varnish ; and, for cold seasons, another and light varnish. The gold varnish, used chiefly for gold leaf (and hence so styled), should be of a strongly adhesive and binding quality, but dry very quickly. Strong varnish, which is so frequently in use, should possess a drawing but not much of a gluing power ; when held between the thumb and forefinger, then separated, threads of four to five centimetres should be formed. The varnish must not be too dark, as the stronger the varnish the longer it has been burned. This easily happens when the linseed oil has been of bad quality ; dark varnish exercises great influence upon light tints.

MEDIUM varnish should admit of use without further manipulation ; it should not draw too much, and be comparatively free from fatty substances, not that the fatty quality should be entirely eliminated, but that unclean substances should be removed by means of bread and onions, or otherwise they are pretty sure to give trouble during the printing.

WEAK varnish should possess a little consistency, but should not draw at all, and all its fatty constituents must have been eliminated. It must be remembered that the weaker the varnish, the greater its tendency to smear. The same rules must be observed with very weak varnish, which consists entirely of pure linseed oil and an addition of pitch resin.

Gold varnish* (or gold size) is used with medium varnish and a little driers, when printing for gold leaf or bronzes ; the driers expedite the drying and render the gold or bronze more adhesive. For glazed papers which hold the colours badly, the use of driers is probably† the only means of obtaining good results. With coloured and chromo papers, where the use of gold varnish is excluded, and where it would tear away the coating, medium varnish mixed with venetian turpentine‡ is used, the latter making the gold and bronze adherent.

* In using gold size, much depends upon the paper being printed upon.

† "Probably" seems to indicate that the use of Manders' Pomade or Trochard's Pommade Emolliente has not become well known on the continent.

‡ Venetian turpentine should be replaced by the pomades above.

In bronze printing, care should be taken to add venetian turpentine‡ more particularly with coated papers of dead finish, for although the medium varnish apparently seems as though it would bind the bronze, in a short time it is absorbed and the bronze may be brushed off. A little gold varnish and driers used in the colour is useful to impart a good gloss in certain kinds of printing.

FOR colour work§ on chromo paper a little strong varnish should always be used, particular care being taken that the first colours cannot be wiped off. If it is removable, the varnish added to the colour has not been strong enough ; this must be carefully considered with such tones as require this addition on account of their light colour. In the colours applied later this addition is advised only in extreme conditions ; otherwise, they become more difficult to dry, and rapid work is one of the first points to be desired nowadays. Medium and light varnish are more often used here. Colour work on glazed papers requires similar treatment.

With strongly-sized papers, which absorb the colours badly, and especially when several colours are applied consecutively, medium and weak varnishes must alone be used. With half-sized papers receiving preference on account of the ready absorption of colours, and which are specially used in oil colour printing, it is recommended to mix the first colours with medium and afterwards with weak varnish ; with the last colours some very weak varnish may be used if the drawing permits. Postal and official papers (readers will understand the reference) require such varnish adding as is quickly absorbed by the paper, and the colour must not lose much by reprinting ; medium and weak varnishes are also recommended here. The same should be used with such papers as are usually employed in printing drafts and banking documents. With ordinary label papers, which are very thin, commence with the addition of a little strong, and after this, a little weak varnish, but only as much as the paper can stand without tearing loose ; next continue to print with medium and weak varnish. Stronger papers, but little glazed, also require a little strong mixed with weak varnish. With strong papers, highly glazed, only medium and weak varnishes should be used. For dead finished cardboards, a little medium varnish should be added to the colours, as here, also, the colours can be readily brushed away if only weak varnish be used.

WITH work in the steam press or machine, strong varnish should be used in summer and weaker varnish in winter ; furthermore, strong papers will require a stronger, and weak papers a weaker grade of varnish. The application of the varnish must vary according to the papers and grade of work in hand.

In gold printing, the press will not allow the printer to use much varnish.

§ This treatment seems to be on a wrong basis ; it has been pointed out over and over again that the first printings of a chromolithograph must be softened by a pomade (see note †), and become practically absorbent surfaces for the reception of the later colours. Unless this is done, the later colours fail to lie even, and retreat in mottled patches all over the work.

With papers of a dead finish, attention must also be paid to the adhesive quality of the gold, and a little medium and weak varnishes and venetian turpentine^{*} will need to be added to the ink, or the strong ink will destroy the surface of the paper; a weaker ink, however, without the addition of venetian turpentine, would not make the gold adhere, on which account the same rules should be observed as in hand-press printing. Here, in place of the venetian turpentine, boiled cologne glue is used. Sometimes the printer will have to work with glazed papers that will not permit of gold varnish being applied at all, and where the weakest colour will tear off; in such instances, medium varnish should alone be used, with venetian turpentine or cologne glue. With other papers, in gold printing, it will be well to use the same ink mixture as was before given, care being taken not to make the ink so strong, so as to prevent the tearing of the paper.

Gold varnish is also used for the following and other purposes:—Weak printing papers,^{*} of which large quantities are used; where much colour is used in the drawing; where the colour is to be produced as light in tone and as cheaply as possible; to enable the sheets to be taken from the stone without difficulty while the press is in motion. If colours are used with the light varnish in greater quantities, there is danger of quickly smearing the drawing, and the transfers, which are often expensive, would need renewing. This can be prevented by adding gold varnish to the colour that is rolled on, and then further thinning the latter with petroleum[†] until the needful lightness of tone is given to the colour; the sheet will pass easily from the stone. The gold varnish will then keep the drawing clean; petroleum has little fat, and gives the requisite quality to the colour. With this mixture good results may be obtained, and there should be no necessity for renewing the transfers. The same holds good with regard to colours which have to be produced cheaply in certain lines of estimated competitive work. This, however, is not advisable for higher grades of work, nor should it be generally considered.

Papers which absorb the colours rapidly, and then assume a dead appearance, whereas the opposite has been expected, should have some good varnish added to their colour, which should originally contain some medium and weak varnishes. Whenever a glossy appearance is desired, gold varnish must be used, but only up to the limit where the prints will neither pull off nor stick together. In general, only such varnishes should be used in printing with the power press as, according to the size of the edition, will facilitate the rapid execution of the printed matter.

For highly-glazed cover papers, medium varnish mixed with weak material should alone be used; colours are frequently applied with difficulty to such papers. In colour printing on chromo papers, a little strong, then medium only, or weak, varnishes should be used with the first colours. On other papers, for colour printing, applying the varnish depends on the character of the paper. Strongly-sized papers are always treated with less strong varnish; those,

however, containing less size are treated with stronger varnish. Hemp and linen papers should always be treated with colours containing medium or weak varnish, as with stronger varnish it takes a long time to dry the colours. For street posters, which are of larger size, and which are printed from zinc plates, strong varnish with petroleum should be used; finer grades of posters, which require a higher grade of paper, should be treated according to the colour with medium or weak varnish. Sili and blotting papers require very light colours, and if a little petroleum is added good results will be obtained.

In general, the selection of the varnish, as before mentioned, is deemed to depend in the first place upon the paper and then upon the work. Only the papers most liable to present difficulty are mentioned, but the general treatment of stock may be deduced from the main hints thus set forth.



An "Electrical Designing Machine."

UNDER the title of an "Electrical Designing Machine," an American journal describes an invention for making designs. At first sight it might be imagined that the machine was capable of making designs after a certain set circle of ideas. But that is not the case, and a careful study of the description of the machine—if it may be called a machine—shews that it is to assist bad draughtsmen in executing their drawing. As regards designing, the machine cannot claim the slightest connection, for it is simply an arrangement of a strong electrical light behind a blind or screen, which receives the shadow of any arrangement of plants which may be placed between the light and the blind. The shadows which fall upon the blind, and upon any paper laid upon the blind, serve as the copies—and herein is claimed the invention of a designing machine. Seeing that wall-paper designs are those for which the invention is most applicable, it would have been nearer the mark had the invention included a large form of the kaleidoscope, from which a number of good geometrical designs might easily be copied. The larger the instrument, the more varied the designs. But as it is, any good draughtsman would much prefer to make his drawings directly from the plants, rather than from a mere black and white copy as formed by a shadow.

UNDER the auspices of the Royal Cornwall Polytechnic Society, a special exhibition of photo-mechanical process work will be held on Tuesday, August 28th, 1894, at the Polytechnic Hall, Falmouth. Every facility will be given for the exhibition of every department of photo-mechanical work.

THE proposed tobacco duty in Germany has had the result of checking orders usually given about this time for lithographic labels. The tobacco industry is very quiet in consequence, but hopes to defeat the Bill, though the money required has to be found some way or other.

* This seems a doubtful point.

† "Petroleum." Manders' Pomade is much better.



What is Colour?

CHAPTER XII.

(Continued).

HARMONY OF COLOURS.

ASSORTMENT OF COLOURS WITH BLACK.

HARMONIES OF ANALOGY.—Binary Combinations of an agreeable nature:—

64	Deep yellow	Black
65	Deep red	Black
66	Deep blue	Black
67	Deep orange	Black
Not satisfactory		
68	Deep green	Black
69	Deep purple	Black
70	Deep violet	Black
71	Light red	Black
72	Light orange	Black
73	Lt. yellow-green	Black
74	Very light blue	Black
75	Very light violet	Black
Employed with dark colours only:—		
76	Blue	Black
77	Violet	Black

Order of beauty in harmonies of contrast:—

1	Red	Black
2	Rose	Black
3	Orange	Black
4	Bright yellow	Black
5	Bright green	Black

Black with sombre colours forms harmonies of analogy frequently agreeable.

TERTIARY ASSORTMENTS of Complementary Colours and Black:—

RED AND GREEN.

1 (better)	Black
2 (better)	Red
3 (moderate)	Green
4 (poor)	Black
5 (poor)	Red
6 (poor)	Green

The difference in disposal of the colours between 1 and 2 or 3 renders a comparison of merit more difficult.

BLUE AND ORANGE.

86	Black
87	Blue
88	Orange
89	Black
90	Blue
91	Orange

Black, blue, and orange do not form as pleasing a combination as white, blue, and orange.

YELLOW AND VIOLET.

89	Black
90	Yellow
91	Violet
92	Black
93	Red
94	Orange

This is only a mediocre effect, and inferior to the arrangement with white.

TERTIARY ASSORTMENT of Non-Complementary Colours and Black:—

RED AND ORANGE.

92	Black
93	Red
94	Orange
95	Black
96	Red
97	Orange

The combination of black, red, and orange is better than the combination of white, red, and orange; and with black the combination is better the higher the tone of the colours.

RED AND YELLOW.

95	Black
96	Red
97	Yellow
98	Black
99	Red
100	Yellow

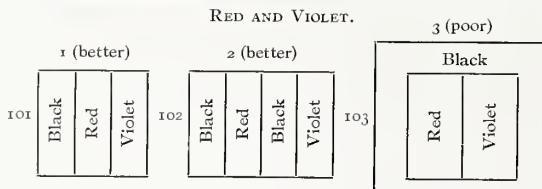
HARMONY OF CONTRAST.—These arrangements (1 and 2), although giving a better effect in this experiment, cannot be recommended to artists. The arrangements 1 and 2 are better than with white.

RED AND BLUE.

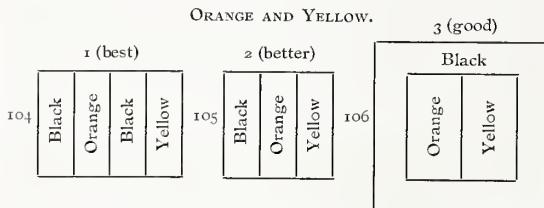
98	Black
99	Red
100	Blue
101	Black
102	Red
103	Blue

The combination of black, red, and blue is not so good as white, red, and blue. No. 3 arrangement is poor; it is so sombre, with too small proportion of brilliancy (red).

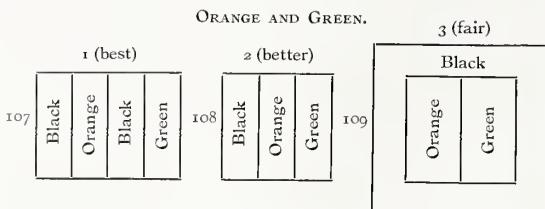
THE BRITISH LITHOGRAPHER.



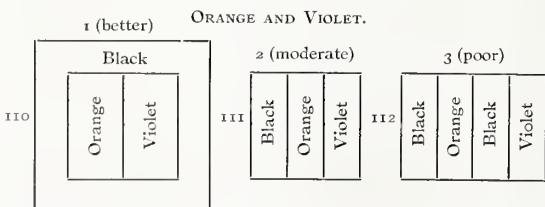
The combination of black, red, and violet, in Nos. 1 and 2, is not so good as with white, red, and violet.



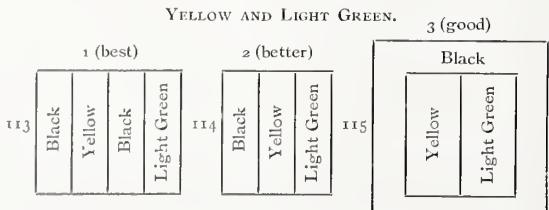
HARMONY OF CONTRAST.—These effects are useful in designs. The combination of white, orange, yellow, disposed as in No. 2, may be preferred to the combination of black, orange, yellow in No. 2. But the arrangement with black as in No. 1 is certainly better than with white as in No. 1.



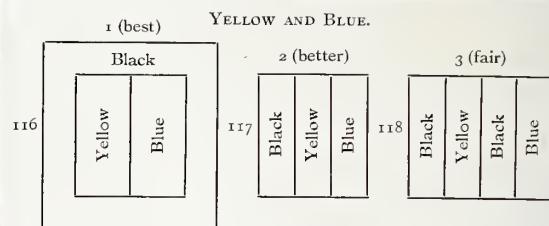
HARMONY OF CONTRAST.—These effects are useful in designs. The disposal of the colours with white as in No. 2 may be preferred to the disposal with black. But the disposal with black as in No. 1 is better than in the similar disposal with white.



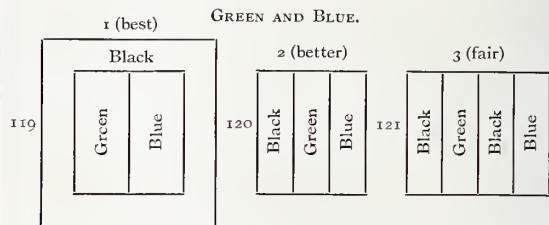
These combinations are better with white. There is too large a proportion of sombre light. They cannot be considered by any means good combinations.



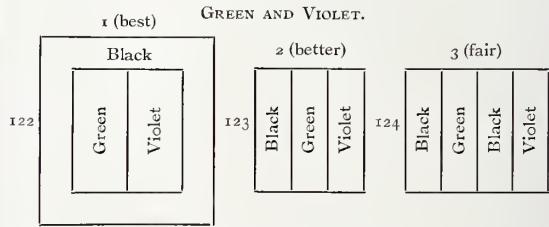
HARMONY OF CONTRAST.—White may be preferred in the No. 2 arrangement, but not in the No. 1 arrangement.



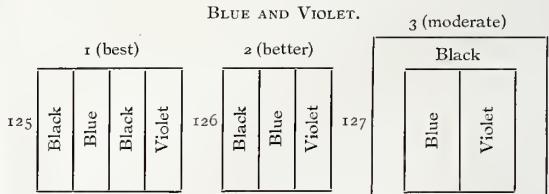
White is preferable to black in these combinations.



The black suits this combination, but it is not superior to the combinations with white.



An inferior combination to black, green, blue.
" " " " white, green, violet.



Blue and violet do not accord well. The arrangement No. 1 is sombre, but is a more agreeable harmony of analogy than the same disposition of colours with white.

(To be continued.)



THE Photographers' Copyright Union is to be congratulated upon the large measure of support accorded to it by members of the profession, no less than eight hundred signatures having been obtained to the agreement concerning prices for reproduction for illustration, etc., this number including all the best professional photographers of the day. Perhaps a larger proportion of the 3,500 members of the profession in the British Isles would have been more satisfactory, but it must be remembered that the piracy complained of scarcely affects inferior work. Process engravers and printers are awaiting the outcome of the movement with much interest.



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"TOWER OF ST. JOHN'S COLLEGE CHAPEL, FROM THE CAM."

From a Wash Drawing in Indian ink.



An Interesting Chapter for Artists in General.



NCEPTIONAL facilities are sometimes afforded the staff of THE BRITISH LITHOGRAPHER and THE BRITISH PRINTER for examining into some of the most interesting and fascinating of the mysteries connected with the reproductive art. One of these opportunities has provided the current issue of the latter journal with a detailed descriptive account of one of our greatest and most famous engraving houses, with particulars of its work which, we believe, have never previously appeared in any publication. So much is now being done by artists, and even by general lithographers, in combination with "line" and "half-tone" work, that a concise account of the process employed by the house under notice—the Meisenbach Co., Limited—cannot fail to be of interest and considerable use. By permission of the Company we are enabled to present a couple of specimen illustrations as representative of their work in reproductions from wash drawing and from a pencil sketch. Their blocks from photographs and ordinary pen-and-ink sketches are perhaps more commonly known.

The method employed, or

THE "PROCESS,"

is briefly thus:—Half-tone engraved blocks can be made from any subject—be they photographs, sketches in chalk, crayon, lead pencil, or paintings, either in oils or water colour. The first step in the process is to make a half-tone negative, and this is usually done by the old wet-plate process; the collodion negative is placed in the camera, and immediately in front of it must be a glass plate having ruled black lines running across both ways at right angles, so that the light passes on to the collodion plate through a series of little square openings formed by the ruled glass plate. The result is that the negative receives the picture in the form of a series of small dots. After this negative is intensified and dried, it is taken in hand by the printer, who places it in a copying frame in close contact with a zinc plate, which has been previously covered with a solution sensitive to light—the sensitive solution may be either bitumen or albumen. The copying frame, containing the negative in contact with the zinc plate, is now exposed to the light for the requisite time. Afterwards the zinc plate is taken out of the frame and developed, and if the sensitive solution used is bitumen, it is placed in a bath of turpentine, and very soon it will be observed that the turpentine dissolves the bitumen from all the parts which have not been acted upon by the light, and owing to the black opaque dots in the negative—after the development is complete—the picture will stand out sharp and clear in bitumen. The zinc plate is now placed in a weak solution of nitric acid, and the acid eats away the parts not protected by the bitumen. After the plate has had a slight etch, it is rolled up

with ink, dusted with powdered bitumen, and heated, so that the bitumen is melted with the ink, and forms a strong resist to the next bath of acid, which may be made much stronger than the first bath. After sufficient depth has been obtained, the ink is washed off the plate and a proof is taken. Should the high lights not be strong enough, the plate is painted over with varnish, except the parts requiring to be made lighter; and the plate receives another slight etch in the high lights. If sufficient care has been taken in these operations, the engraving of the plate is finished, and all that remains to be done is to trim the edges of the plate and mount it on wood, making it type high, and it is ready for the press. For the albumen process—it is usual to take the white of an egg, beat it up well, and add about ten ounces of water and bichromate of ammonia. The zinc plate is covered with this solution, copied in contact with the negative, and afterwards rolled up with thin ink; then placed in a dish of water and the picture developed with a tuft of cotton wool, and afterwards etched as in the case of bitumen. Nearly every worker has his own pet way of working, which he finds by experience to be the best, and it is only by much practice that reliable results can be ensured.

OUTLINE ZINCO WORK.

Now that so many artists are producing work for reproduction in illustrated journals, it should be remembered that outline zinco plates can only be prepared from drawings or prints in one colour—either black, or any colour which will photograph black when the negative is made—that is to say, there must be no gradations of light and shade as in the case of photographs or sketches in wash. After the negative is made, the treatment of the zinc plates is very much the same as in the case of the etching of half-tone plates.

A *process block*, either in "half-tone" or "line," may be described as an engraved plate upon which the picture has been printed and afterwards etched in relief.

A *half-tone block* may be defined as a reproduction of any subject having light and shade in a graduated scale, formed by small dots of varying size.

An *outline zinco block* may be described as a reproduction of any drawing or print when the effects of light and shade are obtained by the lines being made broad or fine.

Black prints from subjects on litho stones can usually be engraved by the outline zinco process, because the impressions are in black, and the effects of light and shade are obtained from the varying size of the dots forming the picture.

So many enquiries as to one or other of these operations and as to general methods are constantly reaching us, that we are glad to have the opportunity afforded by the courtesy of the Meisenbach Company to present these facts and typical illustrations to readers.

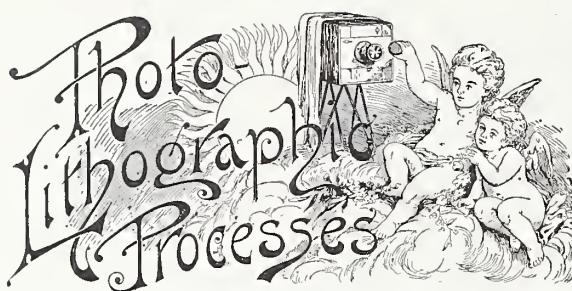


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ENGRAVED FROM LEAD PENCIL SKETCH.

AN INSTRUCTIVE SUPPLEMENT to *Process Work*—"Zinc v. Copper for Half-tone"—shews impressions of the same figure-subject side by side. The plates are of zinc and copper respectively, made with the same sensitive solution, the same exposure from the same negative, and etched to the same depth, with no re-touching or re-etching. Proceeding from the famous

screen maker, Max Levy, and printed at the press of the Levytype Co., Phila., the comparative value of zinc v. copper plates is fairly demonstrated. In this instance, while the copper plate shews a pleasing softness, in our opinion the zinc plate has produced the better impression, the whole effect being good, and clearness and sharpness are noticeable everywhere.



COLLOTYPE.

CHAPTER XVIII.

(continued).



ANOTHER variation of Mr. H. J. Burton's method is as follows:—The negative (previously alumed, and freed from varnish) is levelled and coated with a tough collodion film; which, when set, is placed in a bath to free it from all greasiness. It is then removed to a bath of:—

Alcohol	50 parts.
Glycerine	1 part.
Hydrofluoric acid	1 part.
Water	10 parts.

Whilst in this bath the negative will become almost detached; when nearly in this condition it must be removed to a bath of clean water, well washed, removed, and carefully dried with blotting paper. The support upon which this film is to be reversed is the "flexible support" used in carbon printing. This support is carefully waxed by rubbing, with flannel, upon its surface a solution of:—

Turpentine	144 c.c.
Beeswax	2 grams.
Resin	65 ..

This solution should be allowed to evaporate, and the waxed surface polished with a second piece of flannel. The "support" is then placed in cold water and allowed to become quite flexible, it is then removed and carefully placed upon the negative in the condition as above described. The "support" must be placed upon the negative to exclude all air-bubbles, and is then squeegeed down perfectly flat. Blotting paper may be placed upon the surface, and upon that a weight. After a quarter of an hour the support and negative will have become adherent, and they must be left to become thoroughly dry without blotting paper or weight. When bone dry, and not before, the negative can be stripped off perfectly flat upon the support, and can be used for direct or reverse printing. Stripped films may be preserved in a book.

Any surplus wax can be washed off by the use of a linen pad and turpentine. Alcohol must not be used, or it may cause the film to buckle.

In all these processes requiring the use of hydrofluoric acid, the bath containing such acid should be made up in a vulcanite or lead dish, as this acid dissolves glass.

7. REVERSING BY THE USE OF "STRIPPING PLATES."

Gelatine plates are in the market which are specially prepared for stripping. Such negatives are placed in contact with a gelatine film, or skin, known as the support, which has previously been moistened in glycerine and water, and squeegeed upon the negative. When dry the negative may be cut round, and will come off in contact with the support. It may be used for direct or reversed printing, and is not liable to distortion.

Mr. Wilhelm Otto described in the *Photographisches Archiv* a method of preparing "stripping plates" as follows:—

The glass is thoroughly cleaned with caustic potash solution, and polished with rouge or tripoli. The plates are then waxed. The waxing may be done in two ways. Take a piece of linen and rub the glass plate with a solution of:—

Beeswax	12 grains.
Ether	1 oz.

Then polish the plate without removing the very thin continuous film of wax. Or the waxing may be done by warming the plate above the melting point of wax, and rubbing a lump of wax over the surface. Finally polishing it down to a thin film with a piece of flannel before the plate cools. The film of wax is almost imperceptible, so it is necessary to mark the side upon which it has been placed.

The edges of the glass are cleared from wax, so as to leave a narrow margin, by rubbing the wax off with a piece of cloth saturated in ether or benzole. This margin should be painted with a solution of albumen or silicate of soda to give adherence to the emulsion and prevent it leaving the plate at an early stage.

The waxed glass is now coated with collodion containing castor oil. Eight grains of tough pyroxyline and three drops of castor oil to each ounce of mixed solvents—equal volumes of ether and alcohol—being a good recipe. The collodionised glass is levelled accurately, and upon its surface the necessary amount of emulsion is flowed. The emulsion must be coaxed to flow over the surface by the use of a cotton bow stretched across an arc of steel wire or cane. Plates thus prepared may be exposed and developed in the ordinary way, and when dry may be at once stripped by cutting the edge and removing the negative. Such a course, however, gives a thin film difficult to use, and similar means have to be taken, as already described in section 6, for mounting this negative film upon a support.

Mr. Otto recommends as a support the thin sheet gelatine, which can be purchased. Such a sheet is rendered flaccid by soaking in water and placed upon the negative. Upon the gelatine should be placed a sheet of wet paper or mackintosh, and squeegeed down to exclude all air-bubbles and bring the gelatine and film into absolute contact. In the course of drying, the contractile force of the gelatine is liable to tear the negative off at the edges. This should be obviated by pasting strips of paper round the edges. When quite dry, the negative may be cut all round and stripped readily from the glass.

Another method of preparing stripping plates is:—The glass plate must be cleaned, polished, and covered with a thin film of wax, as already described. In polishing off the wax the linen should be rubbed upon a lump of wax. Instead of waxing, the plate may be well rubbed with talc, and thoroughly polished.

After waxing or talcing, the edges must be cleaned and gelatinised or albumenised, as described above; or the edges may be roughed by drawing across them a rough edge of glass or other abrading material. A tough collodion must be flowed on, and the sensitive plate prepared in the ordinary way for the wet process. When the negative has been made and dried, it must be treated with a varnish of gum arabic as prepared in Allgeyer's process above. When dry, the margins of the plate are greased with tallow, and then it is levelled. Upon it is poured a solution of:—

Gelatine	5 parts.
Water	30 "
Alcohol	10 "
Glycerine	3 "

Using one dram of this solution to four square inches of surface. To the above solution should be added a few drops of some preserving liquid, such as phenol, salicylic acid, or izal, and it should be filtered through linen whilst hot. Whilst hot, the solution should be poured upon the levelled negative, and by tilting the plate the flow may be encouraged evenly. In about fifteen minutes the gelatine solution will set, but will require to be placed in an open position for two days to dry. When dry, any retouching may be done with lead pencil. Upon this surface is poured a tough collodion film (one or two per cent. castor oil added to plain collodion). In an hour the plate will be dry, and the film can be cut round and stripped deliberately off from one corner. It can be used for direct or reversed printing, and, if desired, may be mounted upon a glass with indiarubber solution.

REVERSING NEGATIVES.

Before proceeding with other methods, a few more particulars may be added to Mr. H. J. Burton's (section 6 of this chapter) method of stripping any of the dry plates in the market. The notes to be added are:—

(1) The collodion film which is coated upon the negative may be prepared by putting:

Pyroxylene	1 oz.
Methylated spirit	16 "

into a clear dry bottle, and shake up until the pyroxylene (cotton) is thoroughly saturated. Then add:

Methylated ether (sp. '720 or '725)	20 ozs.
--	---------

and shake until the cotton is dissolved, when finally add :

Castor oil	1 drachm
-----------------------	----------

and again shake well up before putting the solution away for a week or two to settle and clear. It is then ready to decant. If too much castor oil be added, when the film is immersed in the water bath it will have an opalescent appearance, which will pass away again later on.

(2) The collodion should be poured upon the levelled negative in just sufficient quantity that the plate will not hold any more without it running over.

(3) The hydrofluoric acid bath should contain :

Hydrofluoric acid	1 oz.
Water	20 "

(4) The second glass plate may be prepared with a film of gelatine, composed of:

Gelatine	1 oz.
Chrome alum	5 grns.
Water	20 ozs.

(5) The collodion used must be tough and flexible. Enamelling collodions are no use, and the best plan is to make it. Hopkins & Williams supply a good cotton, which, with equal parts of methylated spirit and methylated ether, gives the requisite collodion. When making fresh collodion, always test it with a worthless negative before using it for the actual work in hand. Never put the collodion into the cold water bath before it is quite set and cannot be depressed to leave a hollow with the finger. Otherwise it becomes opalescent.

(6) A bath of methylated spirit is frequently used to give the stripped film a final wash when reversed and fixed upon its new support.

In connection with reversal by "stripping films" (section 7 of this chapter) it may be added that the albumen solution used for painting the edges of the glass can be prepared from:

White of	1 egg.
Ammonia	10 drops.

It is also worthy of note that one considerable user (Mr. J. Stuart) finds that during the making of "stripping plates" they should not be put into the wooden rack to dry, as he has found that the wood affects the albumen and collodion so as to prevent the emulsion flowing evenly around the edges.

8. REVERSING BY THE POWDER PROCESS.

This process is of particular interest to the artist as well as to the worker of the photo-mechanical processes. It is a process which can be, and has been mostly, used for producing correct pictures—or photographs—upon any material, in a permanent powder having a richness, which belongs only to a picture consisting of very fine black or coloured powder. The process is divided into a number of stages, thus:—

(a) The negative.

(b) The sensitised solution to produce the picture upon.

(c) The preparation of the glass, or other material, to receive the solution.

(d) The spreading of the solution and its exposure.

(e) The development.

(f) The fixing.

And taking these in order:—

(a) The negative will be such as required for good half-tone work in collotype.

(b) The sensitising solution must contain certain hygroscopic or moisture absorbing properties; and should be of a rapidly sensitive character.

A solution which Prof. Burton (Japan) recommends, as one with which he has had unlimited success, consists of:—

(b) Best gum arabic	80 grns.
White sugar	60 "
Bichromate of ammonium	60 "
Water	7 ozs.
Methylated spirit	1 "

The use of sugar is a guarantee that the mixture will be hygroscopic. The bichromate of ammonium is also hygroscopic. If potassium bichromate be used, then sugar must be used, as the former is not hygroscopic; whilst when the ammonium bichromate is used the sugar may be omitted.

This solution, if it is to be kept for any length of time, must be prepared without the bichromate, and to it must be added two grains of bichloride of mercury (corrosive sublimate), or other good disinfectant, to every ten ounces of the solution, to preserve it. Just previous to use the bichromate must be added. The methylated spirit is only added to increase its flowing power. After compounding, it must be well filtered; and this solution is so thin that it can be filtered through filter paper. Sensitising solutions should be kept in stone bottles, and in the dark room. But in the liquid form these sensitising solutions are not to any appreciable degree sensitive to the action of light.

Another reliable formula for this sensitising solution is given by Dr. Leisegang, as follows:—

(b 2) Best gum arabic	... . . . .	50 grns.
Dextrin	... . . . .	50 "
White sugar	... . . . .	20 "
Honey	... . . . .	10 "
Glycerine	... . . . .	5 "
Bichromate of ammonium, saturated solution	100 "	
Rain water	... . . . .	1 litre.

And other sensitising solutions may be gathered from the following tabulation, worked up from information from the *British Journal of Photography Almanac* for 1887:—

	(b 3)	(b 4)	(b 5)	(b 6)
Dextrine ..	4 drams	..	..	90 grains
Grape sugar ..	4 "	3 drams	..	..
Bichromate of ammonium ..	4 "	..	150 minimis (sat'd. sol'n.)	..
Water ..	10 ozs.	10 ozs.	10 ozs.	10 ozs.
Gum arabic ..	..	7 drams	..	..
Bichromate of potassium ..	..	5 "	..	4 drams
Honey ..	..	..	90 grains	2 "
Albumen ..	..	..	90 minimis	3 "
Glucose ..	..	..	..	4 "

(c) The "plate" to receive this solution depends entirely upon the purpose for which it is intended. If for reversing negatives for collotype, then it must be perfectly clear glass. If for "opal" pictures, then it must be the opal plate, with one face slightly grained to give adherence to the solution and richness to the picture. In a similar way, ornaments in porcelain, china, terra-cotta, etc., may be used. In the latter cases, the negative must be a "film" negative, to allow of it being placed around the curves of the ornament.

(d) The plate is prepared to receive the sensitising solution by first cleaning with whiting, then flowing water over it. Whilst it is still wet, the sensitising solution is poured on somewhat extravagantly and allowed to flow off, until a thin film only is left. This film must be dried in the dark room, with considerable heat. It may be dried in the photo-litho transfer-paper cupboard (Fig. 1, Chap. I.), or in the collotype oven (Fig. 3, Chap. XIII.), or it may be dried over a gas or charcoal stove. When dry it is some twenty to thirty times as sensitive as albumen paper. The

plate, whilst hot, is put into contact with the negative, which should be also warmed, and they are at once put into the printing frame and exposed. The exposure with the solution (b 1) is very short, and need not be more than two minutes in bright sunshine, or it may be timed by using a slip of albumenised paper as an actinometer; when the paper is a dark brown it is probably sufficiently exposed.

(e) The development of the picture is the trying stage in the process, and upon it depends the whole result. The development in this particular (powder) process is really the making of the picture.

During exposure, the negative has protected those portions underlying it from the action of light. The clear glass has allowed the sensitised film to become hardened in proportion as the glass is clear. Thus, when the negative is removed, the unexposed portions are an exact copy of the negative, and such portions are hygroscopic, and in a condition capable of tenaciously holding any powder which may be dusted upon them. Herein lies the whole value of the process, for from a negative another negative can be produced; but the new negative is reversed from left to right. The development which now proceeds, is to dust upon the unexposed film a fine powder.

In almost any atmosphere the sensitised film is hygroscopic, and especially in damp weather it is far better to slightly warm the plate before development. The unexposed portions of the film are still very sensitive to light, therefore the development must be conducted in candle, lamp, or gaslight, but must not be too near the source of light.

The plate is held horizontally whilst a little of the powder is put upon its centre and rapidly spread all over the plate with a fine camel-hair brush of about one inch diameter, or larger for larger work. When once the powder is put on it must be kept in motion until the picture is developed. Slight additions of powder may be made to replace that which is brushed off. Development proceeds steadily, and the image should begin to shew after a minute's work. If the picture is not shewing then, or if it does not shew when the plate has cooled, then it is necessary to assist the development by gently blowing the plate—not breathing upon it. After that, or repetitions of blowing, the image should become properly developed.

(f) The next process is fixing. Ornaments and opals with powder prints on are often not fixed, and it is a frequent occurrence in washing such things for the picture to disappear. In fixing them there is so much difficulty, and they lose so much richness, that many operators do not attempt; but for use in collotype they must be fixed.

After thorough development, the picture is very carefully brushed with a clean brush to get rid of the surplus powder. It is then carefully varnished with plain collodion, which upon setting is put under running water until all greasiness disappears. Then it is put into an alum bath until the yellow of the bichromate is washed out. When thoroughly cleared of yellow stain it is washed and dried, and is ready for use.

If it be desired to fix the picture without this collodion varnish, which gives a glaze to the finished

picture, then it must be done as follows. Flow over the plate a mixture of :—

Methylated spirit	8 parts.
Water	4 "
Sulphuric acid	1 part.

The acid and water are mixed and allowed to cool. Then the spirit is added. This liquid is allowed to lie upon the plate, and if in five minutes the yellow stain has not gone, the liquid is poured off and two more parts of water added. By repeating this process, it will soon be found how much water is really necessary. Too much water will take the picture away as well. When the colour has gone, the plate is soaked in methylated spirit to free it from acid. It is then set to dry and is finished.

In giving this description, it has contained information for both the photo-mechanical reversed negatives and the opal picture process. In dealing with both, "powder" has been mentioned indefinitely; but to be more definite, the powder for reversals should be plumbago or levigated graphite. The powder for pictures can be any material which will lend itself to fine pulverisation and be permanent in its colour.

To be continued.

Death of a Veteran Lithographic Artist.

 HE late Mr. Bedford, who died on the 15th of May last, at the age of seventy-eight, was probably quite unknown to the lithographers of the present day, although his name will be found mentioned in connection with the production of some of the most important art works ever published in this or any other country. This arises from the fact of his portion of the work having chiefly consisted in making the drawings on the stones, although in many cases he also prepared the original drawings. Mr. Bedford mostly devoted his attention to architectural and ornamental art work, in drawing both of which he excelled.

If we go back to 1851, the year of the Great Exhibition of all nations, it will be found that many works connected with ornamental art resulted from that interesting and valuable display; and as all objects possess colour as well as form, chromolithography was chosen as an admirable medium for accurately presenting a truthful record, in every respect, of the beauty of the selected specimens of workmanship exhibited. The late firm of Day & Son, lithographers to the Queen, having decided on the publication of some of these great art works, arranged with the late Mr. Bedford to carry through that portion of the work consisting of the drawing on the stones the very varied collection of subjects selected for illustration. This, with the aid of a trained staff of draughtsmen assistants, he most successfully accomplished. It will be readily understood that in the production of a large number of plates, each being in several colours, there was a vast amount of work requiring very careful drawing. If we take the "Industrial Arts of the Nineteenth Century"—a series

of illustrations consisting of every description of manufacture selected from the Great Exhibition of 1851—this folio work alone contained one hundred and sixty plates in colours and gold, which had to be drawn on one thousand and sixty stones in order to produce the various colours. The "Art Treasures of the United Kingdom," exhibited at the Manchester Exhibition in 1857, consisted of upwards of one hundred plates in colours and gold, requiring something like one thousand stones to properly depict the varied ceramic, metallic, vitreous, textile, and sculpture objects illustrated therein; and the folio edition of "The Grammar of Ornament," consisting of one hundred and one elaborate sheets of designs of every style of ornament. This used also about one thousand stones, on all of which more or less drawing had to be made. Some idea will be obtained of the great labour gone through by Mr. Bedford in preparing these stones for the printers. For some of the works Mr. Bedford had also to make the original drawings, from which the chromo-lithographs were afterwards taken; but in the case of "The Grammar of Ornament," all the original drawings were made by the late Mr. Owen Jones. Mr. Bedford also worked for other firms, and had his time fully occupied with architectural lithography, in which he was unsurpassed. Mr. Bedford's work, however, was not confined to drawing on stone; finding that photography would greatly assist him in making the original drawings required for the works issued by Messrs. Day & Son, he turned his attention to acquiring a perfect knowledge of the art, with the result that he became one of the most skilled and successful photographers of landscape and architectural subjects. His most important work in this way was the production of one hundred and seventy-two large photographs for the Prince of Wales, of the Holy Land, Egypt, Syria, Constantinople, etc., during the tour in the East, in which, by command, he accompanied His Royal Highness. This work was also published by Day & Son. Mr. Bedford was for a long period travelling the United Kingdom taking landscape and architectural photographs for provincial publishers.—*B. & C. P. & S.*

THE earliest known engraving is of St. Christopher with the Infant Christ upon his shoulder, and bears date 1423. There are only three proofs of this print known to be in existence—one in the Cabinet of Engravings in the Royal Library, Paris, the coloured proof in Lord Spencer's Library, and the third in Germany, which is the one discovered in the Carthusian Monastery of Buxheim. However numerous may have been the engravings of the fifteenth century, they were easily exposed to destruction, and became extremely rare, collectors being unable to trace anything prior to the date of the one above mentioned.

THE March and April issues of *The Engraver and Printer* (U.S.A.) are further proofs of the excellence this journal is attaining. Profuse illustrations from the highest class of engraving in half-tone will please and interest the trade everywhere. The coloured frontispieces are most admirable.

Gleanings from the U.S.A. Tariff Bill Agitation.



THE discussion on the new Tariff Bill, presented by a committee of the United States Senate, has resulted in the elucidation of many points which were previously little understood, while, simultaneously, much highly interesting information concerning the production of U.S.A. goods, as contrasted with those imported, has now been made public.

On the representations of the Tariff Committee of National Lithographers, the duty on lithographic goods has been placed at twenty-seven cents a pound, and it is in protesting against this rate that the importers put forward a valuable summary of lithographic trade conditions.

As regards the growth of the trade in the United States, it is shewn that in 1880 the industry embraced 167 establishments, employing 3,461 persons, with £900,360 capital, and an output of £1,382,487. In 1889 this had grown to 563 establishments, with an invested capital of £6,400,000, 16,500 employés, and £8,000,000 output; while at the present time there is an invested capital of £7,200,000, 18,000 employés, and an annual output of almost £10,000,000. The importations of lithographic matter, as given by the Custom House at New York, are:—1887, £109,778; 1888, £114,805; 1889, £120,620; and have never gone beyond the last-mentioned amount. It is stated that the paper used by lithographers is produced cheaper in the States than abroad. An instance is given where plated paper has been sold and delivered to a firm in Rheydt, Germany, by a New York company, notwithstanding freights and duty, at a price less than the same quality of paper could be purchased in Germany.

The importers submit the following comparative tables of wages and hours in the United States and abroad:—

WEEKLY WAGES.

	A broad.	U.S.A.
Crayon artists	42/- to 52/-	£5
Transferrers	33/- to 42/-	£4 to £5
Provers	33/- to 42/-	£4 to £5
Printers	33/- to 42/-	75/- to 90/-
Feeders	12/6 to 16/-	28/- to 33/-
Boys and apprentices	10/6 to 14/6	12/6
Foremen	£6	£7

HOURS.

	A broad.	U.S.A.
Crayon artists	45 to 50	47
Transferrers	53	53
Provers	53	53
Printers	53	53
Feeders	53	53
Boys and apprentices	53	53
Foremen	53	53

The American lithographers claim that the averages are as follows:—American workmen £5 5s., and foreign workmen £1 17s.; but the importers claim that the correct figures are:—American workmen £3 16s., and foreign workmen £2 2s.

To offset this, the importers state that American presses produce from 5,000 to 7,500 impressions daily, while those abroad never exceed 3,500. The higher rate of speed attained in the States more than equalises the difference in wages abroad. Rents and insurance in Berlin are equal to and in some cases higher than those paid in New York city. Rents in the provincial towns of Germany are not lower than the average paid in the interior cities of the United States. It is stated the discrepancy of prices between two German printers who manufacture similar lines is used as a foundation for the charge of dishonest invoicing. But is there no discrepancy of price amongst lithographers in the United States? Those conversant with American prices know that work done by, for instance, L. Prang and Co., of Boston, costs one hundred per cent. more than by many firms in New York, and prices quoted by the Knapp Lithographing Company can be beaten at least fifty per cent. by any number of Philadelphia firms.

The importers claim that the present tariff is sufficient, and that the cost of production has been lowered in the United States. When the McKinley Bill went into effect, the size of stones used was 35×50-in. It is now 36×52-in., and it is said that presses are now being built to take plates 46×65-in.

While German productions are particularly referred to in the "abroad" references, British interests are also concerned in any alteration of the tariff rates.

The compilation of comparative rates of wages and hours affords interesting reading in view of present-day labour conditions in this country.



Lithographic Transfers.

RECENTLY we learn that someone has been experimenting with etching liquids, with the object of finding one which will etch the stone to a considerable extent without affecting the work. It is claimed for the discovery that it will assist in making lithographic transfers equal to the original. The essential part of the etching liquid is to use partially neutralised nitric acid. The acid may be neutralised by putting into it some scraps of lithographic stone. According to the description, it seems that the pieces of stone are put into the acid, and when effervescence ceases the clear liquid is withdrawn. If the quantity of stone added is sufficient to withstand the attack of the acid, and not be entirely dissolved when effervescence has ceased, then the liquid left is altogether neutralised or changed in its character, and is not likely to act as an acid. The "etcher" is composed of:—

Water	... . . . .	2 lbs.
Nitric acid (partially neutralised)	... . . . .	1 "
Tannic acid	... . . . .	1 oz.

In use, this etcher is applied like gum solution to any new transfer, upon which it is left for two minutes, then washed off, and the stone gummed up. The effect is similar to using a very weak acid. The surface of the stone is etched smoothly and the work is scarcely touched at all.

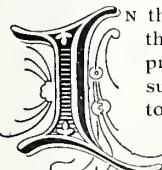
PAGE OF SUGGESTIONS.

Number 6.



"The Apprentice Question" Competition.

[SEE B.L. NO. 17.]

N the competition syllabus, it was asked that competitors should "deal with the practical solution of the difficulty of the supply and the training of apprentices to the litho trade."

The essays received divide themselves into two distinct groups, viz.: (1) Those which deal with the matter from the Trade Union point of view, and only discuss the number of apprentices which should be allowed to each journeyman to compensate for the death or enforced retirement of those in the trade, together with the necessity for a six or seven years' apprenticeship. In making these estimates the writers compute the whole body of journeymen as working practically in one large concern, and do not make any allowance for the great number of small firms employing—according to the estimate—too few journeymen to have an apprentice at all. (2) Those which deal with the matter on practical points and principles, altogether apart from the use of figures.

The second group of essays undoubtedly touch the most points, and shew at once that they are designed in a more or less perfect manner to meet the conditions of the subject. Of course there is a tameness in such essays which may not be palatable to the more advanced printers who are apt to speak their minds in strong terms, conveying the weight of their feelings against the way in which the trade is simply being cut up by the present mercenary age.

The essays which are written most carefully upon these lines are those contributed by "X," Edinburgh, and "Devoniensis," Plymouth; and of these two that by "X" is somewhat the better one.

THE sum of One Guinea has been forwarded to MR. EDWARD WATT, 15 Caledonian Crescent, Edinburgh, who writes under the *nom de plume* "X."

THE APPRENTICE QUESTION.

THIS question affects the efficiency and vitality—the very existence—of the lithographic trade, in its present and future state.

In taking up this question we must first ask, What are the evils and what are the causes of these evils?

The evils are: first, the displacement of journeymen by apprentices; second, the producing of incompetent journeymen, with its natural concomitant evil, the improver, who is a standing reproach to his apprentice-master and a direct menace to the betterment of his fellow worker.

These evils are caused by the greed of those employers who neglect their moral responsibility toward their apprentices.

They will *teach him the trade*—the whole trade; not a part of it, and then sweat him for the remainder of his term. Also by the culpable carelessness of journeymen who do not look on the apprentice with favour, and who allow him to *drift* through his term as best

he may, with the result that when a lad finishes his time he has to shift to gain experience, i.e., finish the learning of his trade.

Being buffeted about in doing so, a bitterness creeps into his heart against his fellows, which often, if properly traced, will be found to be at the bottom of much of the blacklegging in the trade.

To solve this problem successfully, great caution, intelligence, and a desire to sacrifice the personal in the interest of the whole, must be the ruling guides. Employers must be prepared to relinquish certain rights and accept new responsibilities. Workers must also be prepared, through their organisations, to take in hand new duties, and look to the apprentices as *their children in trade*.

Before an employer takes an apprentice, the lad should be sent to the Trades Union in the city to pass an examination as to his physical and mental abilities. The Union should have a doctor, whose fee would be paid by the Union, his duty being to examine all applicants sent up by the employers; to report to the Union whether the lad had colour blindness; if his eyesight were sufficiently sound for the requirements of the trade; if free from the diseases which the trade is likely to encourage the development of; if his nervous system is sufficiently strong to stand the strain and noise occasioned by the machinery of the trade; with any other necessary particulars. The lad should be accepted or rejected according as the doctor reported.

This may seem a very sweeping reform, but it is absolutely necessary for all concerned.

It will enable the lad and his parent to know at the very beginning if the trade is suitable for him, and if he stands a fair chance of succeeding at it. If not suitable to his constitution it allows him to go to a trade which he is better adapted for without wasting a year or two of his precious youth.

It will enable employers to know when they take an apprentice, that he is capable of giving them a fair return for any care and attention spent on him.

It will reduce to a minimum the loss through (1) the sickly having to leave the trade; (2) the death of apprentices in the course of their time; (3) the waste of time, energy, and patience expended on lads who are totally unfitted to become lithographers, and remain a drag and hindrance to all concerned.

It will benefit the Trade Union by ensuring that its future members will be in physique, health, and skill, desirable comrades.

The apprenticeship now commenced, after the scrutiny of the Trades Union, the Union should enter the lad as an apprentice member at a nominal fee.

Technical classes should be formed; these should be wholly supported by the employers, teachers engaged by them, and thoroughly under their control, where the chemistry of lithography, the theory of machinery, and all other items belonging to the theory and practice of lithography should be taught.

When it has been proved that the hours of litho printers are longer than is warranted in the interests of the health of the workers, it is manifestly unfair and injurious to the apprentice that he should work the full day, and then spend his evenings at classes;

therefore, these classes should be taken as part of the day's work of an apprentice. This would compel him to attend. When he left his classes his testimonial, or certificate of merit, would be a guarantee of his ability as a workman—a safeguard to his employers.

Now comes the part where the greatest difference of opinion between employers and workmen exists: the number of apprentices to be allowed to the journeymen employed. With employers who recognise Trades Unions it should be settled easily in conference between themselves and the Trade Union, when the subject would be fairly and fearlessly discussed and a reasonable agreement arrived at.

The great stumbling block is the non-union employer and the sweater, who, by their unfair treatment of the employés, are enabled to cut down prices, which handicap the honourable employers in open competition, thereby directly menacing the betterment of the worker, the efforts of the honourable employers, and the higher development of the trade.

This must be put a stop to by a combination of the employer's Association with the worker's Union, to publicly expose the sweater and his unmanly actions.

Were the reforms advocated here adopted, the apprentice question would be solved in the near future. Employers would not gain so greatly from their apprentices' work, as the reduced hours and the expense of education would use up a good part of the profits derived from that source, while the apprentices would have the opportunity to grow up physically robust, morally elevated, intellectually strong, and practically efficient, with the result that British lithography would soon take its proper place at the top of the lithography of the world.

"X."

THE "INITIAL LETTER" COMPETITION.

THE sum of One Guinea has been forwarded to MR. THOS. JAS. CLARK, Exeter, winner of the first prize (*design reproduced*).

HE entries for this competition greatly outnumbered those for the Essay Competition. Taken as a whole, the designs submitted are meritorious, so much so that fourteen are classed as worthy of mention. Beyond these the mediocre and poor designs call for no further comment. Marks have been lost by non-observance of rules, more especially as regards the condition which required the design to be drawn in

black and white suitable for zincö reproduction.

No. 1, as shewn herewith, obtained first prize on the ground of appropriateness, simple yet effective design, originality, and attention to details and general effect as required in conditions.

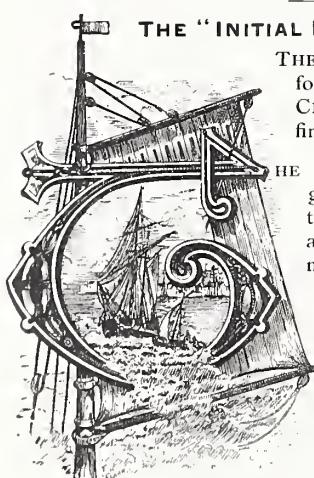
Nos. 2 ("Elton") and 3 ("Chapel"), shewing anchor and lifebuoy on sea view, and draped T crossing bordered vignette, respectively follow No. 1.

No. 4 ("W.C.C."), a beautiful design, shewing outline T with light allegorical interior, is spoilt by its general "flat" appearance. No. 5 ("Landlubber") is appropriate, but the steering-wheel design makes the initial itself very secondary, and the otherwise really excellent design of No. 6 ("Neptune") is spoilt by its environment. No. 7 ("W.H.F.") is tastefully conceived in its brace of seascapes on floriated ground, but is most unsuitable for reduction. No. 8 ("Pistol") is a neat picture of medium interest, the execution perhaps being worthy of a better design. No. 9 ("Syro") is a good design, but on other points does not rank high. No. 10 ("W.J.") is effective and appropriate, and but for secondary position of initial would have taken a much higher position. No. 11 ("La Straw") with Ship Canal views, and No. 12 ("Tower"), with a beautifully designed mosaic T on vignette enclosing Tower Bridge, form very pretty pictorial pieces, but in their wash colours do not comply with rules. No. 13 ("Sylvio") is bold in execution and design, but scarcely tasteful and pleasing. No. 14 has sinned similarly with 11 and 12, whilst his initial is merely a small accessory to the design.

Answers to Correspondents.

LIN reply to Mr. Sacret, of Reading, who enquires after the methods of putting on grounds for stone engraving, it should not be at all difficult to get the intensity of grounding if the old-fashioned method is pursued. One such course, is to prepare some good gum arabic solution and add to it a little nitric acid. Having prepared the stone, and given it a face as fine and polished as can be done by any known method, then gum it over evenly. The gum works much better if previously strained. When the gum is dry it should present a fine glossy surface. If the gum has been dried by heat then the stone must be allowed to cool before proceeding. When the stone is dry and cool, a quantity of water should be poured upon it and assisted to remain in an even layer whilst it dissolves the gum. The gum being dissolved, the stone is slanted up under a tap, so that an even flow of water can pour down upon it and remove the dissolved gum from the surface. This pouring on of water should be allowed to act freely, and should not be assisted by rubbing the stone, which would defeat the end in view. Finally the pouring of water is stopped and the stone allowed to dry. When dry it should present an even dull surface. If there are streaks or patches of glossy gum, the pouring of water must be resumed, until, when dry, the dull even appearance is obtained. Under such conditions, the stone will be free from gum upon its surface, but the minute pores will contain small quantities of gum, which is all that is necessary for stone engraving.

The grounding can be either best Paris black or red chalk, either of which can be rubbed into the stone to produce any depth desired; the surplus powder being removed by gently rubbing the surface with a cloth. These powders may both be used dry; or a better effect may be produced by using the



(pure) red chalk mixed with a little water. This solution is evenly smeared and rubbed over the stone with the hand; any uneven parts can be similarly removed by the hand, in the same manner that a copper plate is cleaned up with whiting. All specks or uneven patches must be removed with the finger and a bit of rag, leaving a dull even surface to work upon.

As regards a second enquiry as to where ladies may find employment in the artistic department of lithography, we should recommend you not to try to introduce a lady anywhere at present. The trade is so overrun with apprentices, and so overstocked with journeymen who have wives and families to support, but cannot find employment, that any attempt to introduce a lady into any house of first-class standing would inevitably cause such hostility as to strain the relations between employers and employés—a state of affairs which, more especially in the present condition of trade, no one has any desire to bring about.

CORRESPONDENTS still enquire as to where they may obtain particulars as to prices, etc., of Bertling's Imperishable Litho Transfer Process—as shewn in a recent number of B.L. We must again refer them to our advertisement pages, where it is stated that terms of royalty may be obtained on application to the inventor and manufacturer at the address given.

IN reply to Mr. H. Cole (Kent), who sends us two impressions from different attempts at half-tone lithography, we can only say that the prints speak for themselves. He will agree with us that there is considerable room for improvement; and we can only reiterate the remarks made upon this subject in the two first paragraphs of chapter II. of the photo-litho processes, which appeared in No. 3 of this journal (Feb.-March, 1892, p. 2), that it is a process surrounded by difficulty and requires a large amount of experience in it, to obtain even a passable print. We should recommend a trial of the collotype method of obtaining transfers for stone, in which there is a greater possibility of being successful.

MR. G. MACDUFF'S question regarding lithographic ink will be best answered by referring to our articles on "Practical Lithography" (chapters VI., VII., and VIII.) dealing with printing inks, varnishes, etc. If we have overlooked any detail, will our correspondent again write us.

"J.S." will obtain full particulars as to zinco-work apparatus by writing Messrs. Penrose & Co., 5 Amwell-street, E.C.

Correspondence.

Headingley, Leeds, June 18th, 1894.

To the Editor of THE BRITISH LITHOGRAPHER.

EAR SIR,—As you had spoken so highly of "The Rapid" solution as a substitute for polishing stones in your issue for April-May last (p. 104) I obtained some, but regret that I cannot report

favourably of it. It leaves the stone rough, which wears dampers out in the same way as a grained stone will; but the real objection is that it does *not* take out the old work *safely*. The old work is so very liable to roll up with the new. It was only the other day I put on fresh work on stones that had been well polished with "The Rapid" and finished with snake-stone to take the roughness off, and the old work rolled up so freely that in one case I had to spend quite a quarter of an hour in cleaning an octavo stone. Yet the old work had only been on a few days, and was a rather light note head.

The chief use of the solution seems to me to be where a lot of "architects' quantities" or similar work is done—just a few pulls and the stone is done with and polished off at once. It appears to me very doubtful if any chemical will take out the old work *safely* when it has been on more than a few hours. The ink soaks in so deeply, as is proved by the general necessity of using pumice stone or "grit" to take it out before finishing with snakestone.

I remain, yours truly, H. E. GRANTHAM.

75 Glassford-street, Glasgow, May 21st, 1894.
To the Editor of THE BRITISH LITHOGRAPHER.

M^r. ALEXANDER WOODROW notices in THE BRITISH LITHOGRAPHER for this month, page 122, "Mr. William Day, who claims to be the oldest chromo-lithographer in Europe." Mr. W. will be glad to know how Mr. Day makes out this claim, and will be glad if you can give him any information.

21a Berners-street, London, W., May 26th, 1894.
To the Editor of THE BRITISH LITHOGRAPHER.

DEAR SIR,—Thanking you for directing my attention to Mr. Alexander Woodrow's enquiry as to how I justify my claim to being the oldest chromo-lithographer in Europe, I would in reply say that I was in a manner of speaking born in the bed of a lithographic press something more than seventy-one years ago; my father being at the time one of the very few lithographers then existing in London, and that from the time I could toddle I passed my time in my father's printing room, and from that time to the present moment have never lost my connection with lithography. So that perhaps there may be older men so far as their own years are concerned, still living, who have been connected with the art, but I should much doubt whether there is one who has spent so many years practically in it.

Yours faithfully, W. DAY.

75 Glassford-street, Glasgow, June 4th, 1894.
To the Editor of THE BRITISH LITHOGRAPHER.

DEAR SIR,—I am favoured with your reply to my enquiry, this morning, with copy of Mr. Day's letter, which however is not an answer to my question. I am well aware of Mr. Day's long experience as a lithographer; what I asked is, "How he claims to be the '*oldest chromo-lithographer in Europe?*'"

Yours truly,
ALEXANDER WOODROW.

Trade Notes.



MESSRS. J. ADAMSON & SON, the enterprising Rothesay photographers, have recently undertaken collotype work with gratifying success.

A demy machine provided by Messrs. Furnival & Co. has evidently been fully maintained at work, and now we hear that orders booked are so numerous as to necessitate a larger machine being put down capable of producing prints up to 30×20 -in. The principal work produced so far has been connected with illustrations for steamboat and shipping companies. The services of Mr. Denovan, who has already received mention in our columns, have been secured for this new development of the business, and we expect to see much good work produced, and to find Messrs. Adamson become as famous for collotype work as they are for general photography.

THE invitation card for the opening of the Tower Bridge on June 30th, 1894, is ornamental in character and printed in delicate colours, to produce as far as possible the effect of a water-colour drawing. The royal arms are on the left and those of H.R.H. the Prince of Wales on the right, with the arms of the Corporation of London in the centre at the top of the card, the armorial bearings of the Lord Mayor and Sheriffs being placed at the base. The Bridge House Emblem occupies a prominent position in the centre over a picturesque view of the Tower Bridge, which is supported on either side by figures emblematical of Grace and Strength. The card bears the signature of Albert J. Altman, Esq., the chairman of the committee, whose arms are placed at the side of his signature. Messrs. Blades are responsible for the designing and printing.

AMONGST the very best specimens of wood and copper engraving recently received, are a business card and a sample sheet of illustrative catalogue work produced by W. J. Rawlings, designer, photographer, and engraver, 282 High Holborn, W.C. Artistic and eminently tasteful in finish, the proper interpretation of light and shade, of correct drawing, and of appropriate attention to details, result in productions which cannot fail to gratify patrons. The trade desiring wood, copper, and metal engraving, would do well to communicate with Mr. Rawlings.

OUR article in last issue relating to printing on sheet metal contained a reference to the work of the Metallochrome Printing Co., Ltd., and in reply to enquirers we may say that this firm holds a patent for printing on metal in colours direct from the stone. Their address is 32 Great St. Helens, London.

MESSRS. A. B. FLEMING & CO., LTD., Caroline Park, Edinburgh, and 15 Whitefriars-street, E.C., are issuing a neatly got up and attractively printed price list of their fine dry colours and coloured inks for litho and letterpress. Printers who have not yet received a copy should apply for one.

MESSRS. ALEX. SEGGIE & SON, Edinburgh, are shewing their usual enterprise in pushing the sale of litho materials, and added to the undoubted practical value of their machinery and supplies, it is not surprising to learn of sales in many directions. A specimen of their "latest" mills, with granite rolls, was exhibited at the meeting of the British Chemical Society on July 19th last. They have dispatched another stone grinding and polishing machine to a Paris house. This forms the sixth supplied to the same firm, and is to grind stones two metres long (over 78-in.) The Seggie Rotary Card Cutters are earning encomiums, one customer saying that they do the work 50 per cent. cheaper than guillotines and better. Seggie litho machines are being supplied with the improved self-delivery and automatic damping, which is described as working with the utmost precision and smoothness. Intending purchasers of litho plant should not fail to obtain particulars and prices from Messrs. Seggie.

Prize Competitions.

COMPETITION C.—We offer a prize of **ONE GUINEA**

for the best design sent in suitable for a MENU CARD.

The design to be in black ink on white card, and not to exceed $8 \times 5\frac{1}{4}$ -in. The design to be drawn in a manner suitable for zinc reduction to about one-third the size of the sketch.

COMPETITION D.—We offer a prize of **FIFTEEN SHILLINGS**

for the best essay on the subject—"WHY LITHOGRAPHERS SHOULD BE PHOTOGRAPHERS."

RULES.

1.—The essay must not exceed 1,000 words (the longest essay will not necessarily secure a prize).

2.—All papers and designs may be signed with a *nom de plume*, but the correct name and address of each competitor must accompany each paper or design submitted.

3.—All papers and designs for competition must arrive on or before Tuesday, September 4th, 1894. The award will be published in the October-November issue.

4.—Competitors should address essays and designs for competition to The Editor, BRITISH LITHOGRAPHER, De Montfort Press, Leicester, and envelopes should be marked "Prize Competition" in the top left-hand corner.

5.—The decision of the Editor must be final.

6.—The Editor reserves to himself the right to publish any essay or reproduce any design sent in as worthy of mention besides the successful paper or design.

7.—The Editor cannot hold himself responsible for the return of unsuccessful papers or designs.

NOTE TO COMPETITORS.—Essays must be written on one side of the paper only.

WANTED.

LITHO HAND ROLLER (smooth glazed), must be perfect, about 15-in., ONE NAP, also PRESS.—STEVENSON, 1 Abbey Mount, Edinburgh.

FOR SALE.

TO LITHOGRAPHERS.—TWO TROUGH AND STANDS to be disposed of at half-cost.—Apply at 28 Buckingham-street, Strand, London.

